



National Marine Protected Areas Center

Information Exchange for Marine Educators

Archive of Educational Programs, Activities, and Websites

4-H Goes to Sea

4-H Goes to Sea is a pilot curriculum project for 4-H youngsters aged 6 - 13. University of New Hampshire marine docent volunteers partner with 4-H leaders to help with the curriculum. There are six modules: open ocean, Gulf of Maine and watersheds, sandy beaches, rocky shores, salt marshes, and estuaries. Field experiences introduce the module and the leaders are asked to use the curriculum in interim meetings.

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AAAS Atlas of Population and the Environment

The AAAS Atlas of Population and Environment provides maps, text, and graphics that quantify and illustrate the broader links between population dynamics and the environment. Analyses of individual topics bring together what is known about the ways in which people impact the Earth's environment. Lastly, the atlas contains six case studies that look at population-environment relationships in selected areas.

<http://atlas.aaas.org/> .

AAAS Launches Public Outreach Initiative Focused on Science Literacy

Science. It's Everywhere is a public outreach initiative by the American Association for the Advancement of Science through the Partnership for Science Literacy. Designed to help parents and families play a more active role in their children's science education, it includes multi-media advertising along with a web site, in English and Spanish, to help motivate parents and families to take action in helping their children learn science.

<http://www.tryscience.org/parents/parent.html>

Adopt-A-Beach School Assembly Program for Los Angeles Watershed

The Malibu Foundation offers a comprehensive environmental program designed to motivate teachers and K-12 students to care about beaches and oceans. The *Adopt-A-Beach School Assembly Program* demonstrates how beaches and oceans get dirty and provides hands-on opportunities to make a difference by recycling, reducing litter, and cleaning up the beaches.

<http://www.malibufoundation.org/tmffe004.htm>

After the Storm Television Special about Watersheds

The Environmental Protection Agency and the Weather Channel co-produced *After the Storm*, a television special about watersheds. *After the Storm* shows the connection between weather and watersheds and the importance of watershed protection. Key scientists, water quality experts, and citizens involved in local and national watershed

protection efforts provide insight into the problems as well as solutions to today's water quality crisis.

www.epa.gov/weatherchannel .

El Agua Es Importante

El Agua Es Importante: guía de maestro sobre recursos de agua, Volumen 3, available free, includes a teacher's guide and posters created by the U.S. Geological Survey's Water Resources Education Initiative. Designed to help primary and middle school teachers satisfy National Science Education Standards and promote query-based, hands-on learning, topics include oceans and coastal hazards, watersheds, and more.
<http://www.epa.gov/ncepihom/ordering.htm>

Aiming for Excellence: An Evaluation Handbook for Interpretive Services in California State Parks

This handbook provides measures and measurement tools for assessing the quality of educational and interpretive services. It includes visitor evaluation, performance appraisals, evaluation forms and a bibliography. It is available for downloading from the website.

http://www.parks.ca.gov/default.asp?page_id=21700

Alaska Department of Fish and Game Website

The Alaska Department of Fish and Game's mission is to manage, protect, maintain, and improve the fish, game and aquatic plant resources of Alaska. The website contains many resources of interest to marine and coastal educators, including the Alaska Wildlife Curriculum, the Wildlife Notebook Series, and links to refuges, critical habitats, and sanctuaries.

http://www.sf.adfg.state.ak.us/region2/ie/Teacher_Resources/html/teachres.stm

Alaska Fisheries Science Center Cold Water Coral Video and Science Resource Guide On-Line

Journey deep beneath the cold waters of the Aleutian Island archipelago from your computer and explore the rich abundance of life on the sea floor. The "Coral Gardens of the Aleutians" streaming video is set up for either Broadband or dial-up connection. Also available from Alaska Fisheries is a down-loadable Science Resource Guide to help students understand the work of NOAA Fisheries.

http://www.afsc.noaa.gov/abl/MarFish/coral_gardens_video.htm

http://www.afsc.noaa.gov/sep/ResGuide_TOC.htm

Alaska Islands & Ocean Visitor Center

The Alaska Islands & Ocean Visitor Center, in Homer, Alaska, recently opened. This interpretive, educational, & research facility is a partnership of the Alaska Maritime National Wildlife Refuge and the Kachemak Bay Research Reserve, dedicated to the understanding and conservation of the marine environment. The facility offers visitors a window into the world of seabirds and other marine animals, as well as their islands and ocean habitats.

<http://www.islandsandocean.org/index.html> .

Alaska Small Press Catalogue

Wizard Works publishes a variety of titles through the Alaska Small Press Catalogue for the US Fish and Wildlife Service, including *Arctic Nesting Shorebird Guide*, *Wetlands and Wildlife*, and *Teach About Geese*. In addition, they publish the Alaska Wildlife

Curricula for the Alaska Department of Fish & Game. This includes *Alaska's Ecology*, *Alaska's Forests & Wildlife*, *Alaska's Tundra & Wildlife*, *Wildlife for the Future*, and the *Alaska Ecology Cards*.

<http://www.xyz.net/~wizard/home.htm> .

All About Birds

Brought to you by the Cornell Lab of Ornithology, this site includes an on-line guide to birdwatching, sound files of bird songs, a video gallery, and links to a variety of sites where you can report your observations. The conservation section highlights bird conservation success stories. Other information includes habitat management, an educator's guide to bird study, and how to get involved.

<http://www.birds.cornell.edu/programs/allaboutbirds/> .

All About Wetlands Newsletter

"All About Wetlands" is a new newsletter published quarterly by Environmental Concern Inc, publishers of the peer-reviewed publication, *Wetland Journal*, from 1993 to 2001.

"All About Wetlands" contains articles covering a wide array of wetland topics and issues from around the world. Join Environmental Concern, Inc. to receive a copy of the newsletter.

www.wetland.org .

Alternatives for Coastal Development: One Site, Three Scenarios

This website, *Alternatives for Coastal Development: One Site, Three Scenarios*, illustrates three different development scenarios created for a residential area in coastal Georgia. The website includes maps and details of three different designs; comparisons of environmental, economic, and social indicators; three-dimensional views of each; detailed project methodology; and growth and development-related information.

<http://www.csc.noaa.gov/alternatives/> .

American Zoo and Aquarium Association National Awareness Campaign

AZA's National Awareness Campaign will create a unified voice to position the collective member institutions in the minds and hearts of the public as safe and fun family experiences that are also meaningful. They aim to be perceived as trusted experts and a powerful collective voice on animal care, wildlife conservation, and public education about wildlife and wild habitats.

<http://www.aza.org/Publications/2004/03/March04NACTheme.pdf>

Applied Environmental Education and Communication

Applied Environmental Education and Communication is an international peer-reviewed quarterly for both academics and practitioners. It features articles, a discussion and editorial section, and books and materials reviews. A special themed issue on environmental education and communication for biodiversity will be published in 2004.

<http://www.aeec.org/submission/submission.asp> .

Aquarium of the Pacific Celebrates Halloween

Discover the creepy creatures lurking in the depths of the Pacific at the Scarium of the Pacific, October 23 and 24, 2004, Long Beach, California. Pick up the creepy creature map/scavenger hunt at the aquarium information booth to begin your haunted holiday. The first 4,000 children through the door received a special Scarium of the Pacific souvenir. Check out the Aquarium of the Pacific's many educational programs.

http://www.aquariumofpacific.org/NEWS_EVENTS/10_04/scarium04.htm .

Aquatic Invasive Species: An Educator's Information and Materials Guide

This guide is a compilation of selected educational materials on aquatic invasive species, including curricula, posters and print materials, videos, books and compact discs, and web sites. The guide is available for down-loading at http://www.seagrant.umn.edu/exotics/ais_guide.pdf . But for more information, make sure you check out the rest of this extensive website, at <http://www.seagrant.umn.edu/exotics/> .

ARKive – Images of Life on Earth

ARKive gathers together into a centralized digital library films, photographs, and audio recordings of the world's species, creating a record of the world's biodiversity. The website features photographs of endangered and protected species worldwide, and includes information on habitat, status, descriptions, threats, and biology. It also features lesson plans (UK standards). <http://www.arkive.org/> .

ARTNC (North Carolina Museum of Art)

The North Carolina Museum of Art provides online educational resources featuring nature and science activities that can be used in environmental education. The website includes K-12 lesson plans and activities searchable by region, subject, and grade. While none specifically address the marine environment, concepts include animal behavior and adaptation, weather and climate, ecosystems, and more relevant topics. <http://www.ncmoa.org/artnc/>

Ask Dr. Global Change

From the U.S. Global Change Research Information Office, "Dr. Global Change" offers a searchable collection of answers to questions about global warming, ozone depletion, greenhouse gases, and other issues related to climate change. Students can also submit questions of their own and explore related links. This reference service also assists researchers, educators, resource managers, and others in finding information relevant to global environmental change. <http://gcrio.custhelp.com/cgi-bin/gcrio.cfg/php/enduser/home.php> .

Assessing and Monitoring Floatable Debris

Assessing and Monitoring Floatable Debris is designed to provide guidance in assessing and monitoring floatable debris as directed by the BEACH Act of 2000. A copy of can be found on EPA's website. <http://www.epa.gov/owow/oceans/debris/floatingdebris/>

At Sea – A Cruise and Virtual Expedition to the Oculina Banks

Scientists and students explored deepwater coral reefs of the Oculina Banks, stretching 30 miles offshore from Ft. Pierce to Cape Canaveral, Florida. This remote MPA is designated a habitat of particular concern, and is a model for efforts underway to create new MPAs throughout southeast U.S. waters and the Gulf of Mexico. The team used a Remotely Operated Vehicle to study the current health of coral on the banks. <http://oceanica.cofc.edu/Oculina2003/home.htm>

At Sea Newsletter

The University of Delaware College of Marine Studies and the Delaware Sea Grant College Program have launched a new e-newsletter, At Sea. It provides information on

the marine research, education, and outreach activities at the University of Delaware. The website also has links to educational resources.

<http://www.mis4.udel.edu/deptnews/deptnews.html?3501> .

At Work in the Ocean

This CD-ROM contains material mapped to science standards created during a series of live interactive Internet events and from education and outreach material developed during the 1999 and 2000 field seasons of the National Geographic Society's Sustainable Seas Expeditions. The three curriculum units on this CD feature clips, web chat questions and answers, labs, activities, and related resource materials. The units are monitoring a habitat, tools for exploring the ocean, and oceanography careers.

http://www.dlese.org/dds/catalog_NASA-ESERevProd374.htm

Atlantic and Gulf Rapid Reef Assessment Program Report

The Atlantic and Gulf Rapid Reef Assessment (AGRRA) Program is a joint program of the University of Miami's Rosenstiel School of Marine and Atmospheric Science and The Ocean Research and Education Foundation. A comprehensive survey of coral reefs in 20 areas of the Western Atlantic can be used to compare the current health of one reef to that of another, and to evaluate future changes.

<http://www.coral.noaa.gov/agrra/index.html>

Atlas of Extratropical Storm Tracks

From the NASA Goddard Institute for Space Studies comes information about midlatitude storm systems, including maps of storm frequency and intensity as well as plots of individual storm paths. Maps are available as monthly and seasonal means for the years 1961 through 1998 in either global or hemispheric projections.

<http://www.giss.nasa.gov/data/stormtracks/>

Atlas of the Biosphere

The Center for Sustainability and the Global Environment's *Atlas of the Biosphere* contains numerous maps documenting environmental phenomena across the globe, such as water resources, ecosystems, land use patterns, and human impact, at a variety of scales. The Atlas also contains the data sets that were used to generate these different thematic maps.

<http://atlas.aos.wisc.edu/maps.php>

Atlas of Wetlands in the St. Lawrence Valley

The *Conservation Atlas of Wetlands in the St. Lawrence Valley* from Environment Canada, an interactive GIS mapping site, pinpoints the location of some 20,000 wetlands. It provides definitions of the various wetlands and their roles, statistical and descriptive data for specific areas, and conservation options. Users can create their own maps from the original database.

<http://lavoieverte.qc.ec.gc.ca/faune/AtlasTerresHumides/AtlasTerresHumides.html>

Audubon Lesson Plans On-Line

Wild Republic's Learning Adventure features lesson plans about nature, animals and their habitat; this year's focus is on birds. Educators at Audubon provided the necessary content for the 2003-2004 lesson plans, including Puffins, upwelling, coastal food webs, and more. Each unit is designed to enrich students' knowledge and understanding of birds, their characteristics and habitats.

<http://www.wildrepublic.com/lessonplans/2003/index.html> .

Avibase – The World Bird Database

Avibase is an extensive database information system about birds of the world, containing over 1.4 million records about 10,000 species and 22,000 subspecies of birds, including distribution information, taxonomy, conservation status, and more. This site is hosted by Bird Studies Canada, an affiliate of Birdlife International.

<http://www.bsc-eoc.org/avibase/avibase.jsp> .

Back to the Sea of Cortez: Sailing with the Spirits of John Steinbeck and Ed Ricketts

A team of scientists will embark on a 73-foot fishing boat to retrace the historic expedition that John Steinbeck and Edward F. "Doc" Ricketts made to explore the Sea of Cortez in 1940. Their journey was immortalized in a book they wrote together, *The Log from the Sea of Cortez*. A science writer will travel with the expedition and post a daily log of the journey online. Students and teachers in Baja California will join the expedition for different days of studying life in the tide pools.

www.seaofcortez.org and www.mardecortes.org .

Best Practices in Boating, Fishing, and Aquatic Stewardship Education Tools

The Recreational Boating and Fishing Foundation developed Best Practices in Boating, Fishing, and Aquatic Stewardship Education, as well as accompanying tools to facilitate implementation. The document includes guidelines in program development, research, and evaluation and is supported by 11 papers on topics ranging from effective minority outreach to program evaluation.

<http://www.rbff.org/educational/bestpractices.cfm> .

Big Blue Bus from Fisheries and Oceans Canada

The Big Blue Bus is Fisheries and Oceans Canada's Kids Corner with all kinds of activities, contests, and facts. This site has features such as the Water Wizards Club, the Creature Feature, Small Fry Club, a monthly contest, vocabulary, and much more. Among the many offerings, kids can learn about clean water sources, climate change, invasive species, and marine protected areas.

http://www.dfo-mpo.gc.ca/canwaters-eauxcan/bbb-lgb/index_e.asp .

Biodiversity Education Network

The Biodiversity Education Network is a coalition of organizations dedicated to enhancing local, regional, and national efforts to educate people of all ages about biodiversity. It was created to promote networking among those organizations and individuals who are working in biodiversity education. The website provides a searchable database of biodiversity materials, a calendar of events, and an outline for developing an education program along with links to additional resources.

<http://www.bioednet.org/>

Biodiversity Guide for Developing Countries

SciDev.Net is an organization devoted to providing news and promoting debate on science and technology issues relevant to the needs of developing countries. The online guide to the biodiversity challenges facing developing countries looks at the issues surrounding the need to protect global biodiversity in developing countries and the need to promote social and economic growth.

www.scidev.net/biodiversity

Bioscience Literacy

This educational resource of the American Institute of Biological Sciences is designed to promote bioscience literacy. It highlights articles in English and Spanish by scientists, science educators and science students on issues related to seven bioscience challenges, including the environment, biodiversity, and bioscience education. In addition, the website provides lessons and resources to enhance bioscience teaching.
<http://www.actionbioscience.org/>

BirdLife International Database

You can find full accounts of all globally threatened birds on this web database. The accounts include a distribution map and an illustration of each bird. There is a concise account and extended report which gives all of the data held in the BirdLife World Bird Database.
http://www.birdlife.org/datazone/search/species_search.html .

Boston Harbor Islands Curriculum

The Boston Harbor Islands, part of the National Park System, include 34 islands that lie within Boston Harbor. The national park area extends seaward 11 miles from downtown Boston. The landmass of the Boston Harbor Islands is between 1,600 - 3,100 acres, depending on the tides. In addition to maps and visitor information, the website includes downloadable curriculum for teachers and on-line quizzes for students.
<http://www.bostonislands.org/learn/index.html> .

Building a Presence for Science

The mission of NSTA's *Building a Presence for Science* initiative is to end the isolation of classroom science teachers and to provide them with professional development opportunities and science teaching resources. The goals of the program are to identify a point of contact for standards-based science teaching and learning in every school; establish an electronic network of science educators, and create an infrastructure of partners who are advocates for effective science teaching and learning.
<http://www.cabap.org/>
<http://ecommerce.nsta.org/bap/mission.asp> .

California Center for Ocean Science Excellence in Education (CA COSEE)

CA COSEE is dedicated to creating environments in which collaborations among ocean scientists and K-12 educators flourish, with the goal of enhancing the general public's understanding and appreciation of the ocean. The Center marshals the resources of UC San Diego's Scripps Institution of Oceanography, Marine Advanced Technology Education (MATE) Center at the Monterey Peninsula College, the Marine Activities Resources and Education (MARE) Program at UC Berkeley's Lawrence Hall of Science, and California Sea Grant.
<http://www.cacosee.net/index.html> .

California Roots & Shoots Festival

The daylong event is designed to increase young people's awareness of their role as the Earth's caretakers. In addition to student exhibits, the program will include live animals, multicultural music and dance, international children's art, craft activities, storytelling and displays by local conservation groups such as TreePeople and Heal the Bay.
<http://www.huntington.org/> .

Canadian Environmental Literacy Project

The Canadian Environmental Literacy Project (CELP) is developing a series of Canadian-focused educational modules, available on their website. The modules, oriented to introductory classes in environmental studies and environmental science in universities, colleges, and senior high-schools, include lectures, calculation exercises, and materials in support of discussion-type seminars. CELP currently has two modules with a marine focus which look at the ecological sustainability of aquaculture.

<http://www.celp.ca> .

Caribbean Coral Data Center

The Caribbean Coastal Data Centre is the data archiving and management unit of the Centre for Marine Sciences at the University of the West Indies, Mona. The center provides a variety of monitoring data archives, including Reef Check, fish survey, and the annual Caribbean Coastal Marine Productivity (CARICOMP) monitoring data on coral reef communities, seagrass ecosystems and mangrove ecosystems.

<http://www.ccdc.org.jm/mission%20statement.htm> .

Caribbean Volcano Forecast

The *Holocene Volcanic Activity in the Caribbean Plate Margins: Forecast and Risk Assessment* is available from R.B. Trombley, principal research volcanologist for the Southwest Volcano Research Centre in Apache Junction, Arizona. The website will be updated as appropriate. Additional Caribbean plate information is also posted.

<http://www.ig.utexas.edu/CaribPlate/forum/volcanoes/>

The Case of the Wacky Water Cycle

The NASA SCience Files™ series is a distance learning initiative to integrate and enhance the teaching of mathematics, science, and technology in grades 3-5. Each episode includes hands-on classroom and home activities, virtual field trips, subject matter experts, a video broadcast, educator's guide and web-based activities and materials. *The Case of the Wacky Water Cycle* began airing October, 2004.

<http://scifiles.larc.nasa.gov/>

Catch the SEACOOS Wave!

Visit the Southeast Atlantic Coastal Ocean Observation System (SEACOOS) Virtual Waves Classroom and learn about the properties of waves through the glossary and other resources on this website. The website includes information about research, news, and a *Community and Classrooms* link to the waves classroom and teacher workshop information. The site provides access to real time wave data, lessons plans, and a four-color *Making Waves* poster.

www.seacoos.org

Center for Improved Engineering and Science Education (CIESE)

CIESE at the Stevens Institute of Technology sponsors and designs interdisciplinary projects that teachers throughout the world can use to enhance their curriculum and learn problem-solving through use of the Internet. The *Virtual Gulf Stream Voyage* allows students to access real time ocean & atmospheric data and historical primary source materials to explore real world problems, and *The Stowaway Adventure--Adventures on the High Seas*, offers Language Arts and Social Studies activities.

<http://www.k12science.org/currichome.html> .

Census of Marine Life

The Census of Marine Life assesses the diversity, distribution, and abundance of ocean life and to explain how it changes over time. The different elements include: Initial Field Projects; History of Marine Animal Populations; Ocean Biogeographic Information System; Future of Marine Animal Populations; Scientific Committee on Oceanic Research Working Group; and Known, Unknown and Unknowable.

www.coml.org

Center for Alaskan Coastal Studies

The Center for Alaskan Coastal Studies (CACS), based in Homer, Alaska, provides spring school field trip programs during April and May to diverse rocky beaches with extreme tides that range from +24 feet to -5 feet, a salt marsh, bog, lake, coastal forest trail system and sites of archaeological and geological interest. CACS has coastal education curriculum units for grades 4-12, along with many other educational programs.

<http://www.akcoastalstudies.org>

Channel Islands Argonauts Program

For the third year in a row, several local organizations are teaming up to provide an opportunity for 20 outstanding middle school students to become members of an elite group—the Channel Islands Argonauts. This group will have a chance to explore the Channel Islands region with researchers and staff from the Channel Islands National Marine Sanctuary and National Park, as well as compare and contrast the islands with the wetlands of the bayou as part of the JASON Expedition: Disappearing Wetlands.

<http://channelislands.noaa.gov/edu/shoretosea.html> .

City of Portland Wetlands Education

The City of Portland (Oregon) Environmental Services, in partnership with City of Portland Parks & Recreation, has been working for two years with all the 6th graders in the David Douglas School District to carry out wetlands investigations and restoration planting. They have two mandatory field trips, and provide several optional classroom programs. All of the programs are free for the students. Pre-field trip classroom options include a *Riparian Restoration* program and *Water Quality Testing in the Classroom*.

http://www.cleanrivers-pdx.org/clean_rivers/index.htm .

Classroom Earth

The National Environmental Education & Training Foundation (NEETF) launched Classroom Earth, a free website to help educators find the best and most usable environmental education programs available. It is a collection of environmental education programs and resources for K-12 teachers, parents, and students. This new site will help educators, after-school providers, and home-schooling parents to get started or improve their skills in environmental education.

www.ClassroomEarth.org .

Classroom Exploration of the Oceans: An Online Virtual Teacher Conference

The National Geographic Society and NOAA's Office of Ocean Exploration (OE) hosted a 9-part virtual teacher workshop series using ocean exploration to enhance learning in the classroom. Teachers were provided with lesson plans and information, with workshop information linking to Geographic's Ocean Atlas Teacher's Guide, OE's lesson plans, and the Oceans Scope and Sequence Matrix for K-12 Teachers.

<http://coexploration.org/ceo>

Classroom Exploration of Oceans 2005

Three online virtual teacher workshops focus on efforts currently underway to protect and conserve special places in the ocean and explore still unknown areas of the deep ocean. They will focus on new discoveries being made in ocean exploration, delve into historic and physical events newly found or still hidden in the ocean depths, and discuss what we still need to know for effective marine conservation and management.

- Oceans for Life: January 24 - February 6, 2005
- Mysteries and Sirens of the Deep: April 4 - 17, 2005
- Extreme Environments: October 10 - 23, 2005

<http://www.coexploration.org/ceo/>

Clean Beaches Blue Wave Campaign

The Clean Beaches Council is a non-profit organization devoted to sustaining America's beaches. Their flagship program is the *Blue Wave Campaign*—America's first environmental certification program for beaches. The goal of Blue Wave is to promote public awareness and voluntary participation in beach sustainability, including water quality, habitat conservation, public information and education.

<http://www.cleanbeaches.org/bluewave/bluewave.cfm>

Clean Sweep U.S.A. - Solid Waste Education

Keep America Beautiful has a new education website geared for middle grades teachers and students -- Clean Sweep U.S.A. There is a wealth of information, activities, lessons, and links about solid waste.

www.kab.org/kids .

Clearing Magazine

The quarterly resource magazine, *Clearing: Environmental Education Resources for Teachers*, provides the latest news, information, perspectives, teaching ideas, and resources available to teachers of all grade levels and all subject areas with environmental and natural resources education. Published since 1978, Clearing has published over 100 issues.

<http://www.clearingmagazine.org/>

Climate, Community and Biodiversity Project Design Standards

The downloadable draft of the Climate, Community & Biodiversity (CCB) Project Design Standards is designed to identify proposed projects likely to deliver measurable climate, biodiversity and community benefits. The standards are primarily designed for land-use carbon markets but can also apply for sustainable development and biodiversity projects more broadly.

www.climate-standards.org

http://www.climate-standards.org/images/pdf/ccb_project_design_standards_v1.0.pdf

Coastal and Estuarine Science News

The Estuarine Research Federation offers Coastal and Estuarine Science News, funded by the Ocean and Coastal Protection Division of the EPA, to strengthen the link between science and management in coastal systems. Back issues are posted at

<http://www.erf.org/cesn/> . You can subscribe to the mailing at

<http://www.erf.org/user-cgi/cesnlist.pl> .

Coastal Storm Impacts

The NOAA Ocean Service is working with the Weather Channel on a 30-minute show on the impacts of coastal storms on communities and some of the tools/capabilities that are available to help them. The key issues the show will address include ways that the public can be better informed about coastal storms.

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Coastal Wildlife – Feeling the Squeeze

University College in Chichester, England hosted a video conference on October 1, 2003, with presentations on climate change, coastal habitats and coastal defense, a field visit, and workshop sessions.

<http://www.excitingscience.com/pages/924510/>

Coastwatching by Computer: Water Quality and the System-Wide Monitoring Program (SWMP)

The NERR System-wide Monitoring Program tracks short-term variability and long-term changes in estuarine waters to understand how human activities and natural events can change ecosystems. It provides long-term data on water quality and weather at frequent time intervals. There are lesson plans giving step-by-step instructions for accessing and downloading the data and a graphing exercise to help use the data in your classroom.

<http://www.nerrs.noaa.gov/Monitoring/welcome.html> .

<http://www.waquoitbayreserve.org/education.htm#lp> .

Cold-Water Coral Reefs

This report by the United Nations Environment Program World Conservation Monitoring Center (UNEP-WCMC) examines the biology, ecology, distribution, and conservation of cold-water coral reefs. Far less known than the coral reefs in warm, shallow waters of the tropics and subtropics, these cold-water reefs are found throughout the world's seas: in fjords, along the edge of the continental shelf, and around offshore submarine banks and seamounts.

<http://www.ourplanet.com/wcmc/pdfs/Cold-waterCoralReefs.pdf> .

Cold Water Corals

The International Coral Reef Initiative website has created a new discussion area, Cold-water coral ad-hoc committee, on the ICRIForum. You can access this new area directly at <http://www.icriforum.org/router.cfm?show=List/Postings.cfm?CONFID=80> . In addition, the ICRI website links to two cold-water coral publications and provides additional useful links.

<http://www.icriforum.org/> .

The Columbia River Virtual Field Trip

Learn about the Columbia River Watershed, including its history, geology, the headwaters region, First Nations and Native Americans culture, current issues and challenges to the river. Make educational connections and provide glimpses of sustainability about the future of the river with readings on the river from multiple perspectives. The materials are designed for middle and high school students and teachers.

<http://cbi.wsu.edu> .

The C.O.O.L. Classroom Website

The *Coastal Ocean Observation Laboratory Classroom*, from New Jersey's Jacques Cousteau National Estuarine Research Reserve, is a series of Internet-based instructional modules aimed at middle and high school students, linking classrooms with active oceanographic research investigations. The website includes movie clips, downloadable worksheets and teaching guides, career cards, a glossary, and more.

<http://www.coolclassroom.org/home.html>

Copper River Delta Shorebird Festival

The Copper River Delta Shorebird Festival hosts activities, workshops, and community events. The Delta is part of the Western Hemisphere Shorebird Reserve Network and its Shorebird Festival is one of Alaska's premier birding events, with millions of shorebirds and over 30 species of migratory shorebirds resting and feeding there during spring migration. The Delta is the largest continuous wetland on the Pacific coast of North America.

<http://www.cordovachamber.com/index.cfm?showsecondarylinks=true&showcontentlinkID=352&primarylinkID=352> .

Coral Data

The Coral Reef Information System (CoRIS) website is designed to be a single point of access to NOAA coral reef information and data products. The data includes a searchable spreadsheet file of over 3,000 scientific names of coral ecosystem biota, reef names and locations, and lots more. Be sure to spend some time looking through the maps, and pull up some of the many aerial photos.

<http://www.coris.noaa.gov/welcome.html> .

CORAL Discussion Board

The Coral Reef Alliance announces the CORAL Discussion Board to stimulate dialogue on a variety of issues related to coral conservation. The discussion board will allow individuals, organizations, businesses and government agencies within the fields of marine conservation, park management, science, education, and tourism to seek technical advice and share lessons learned with others in a global network of communication.

<http://www.coralreefalliance.org/parks/cdb> .

Coral Park Buddy Program

As part of Dive In To Earth Day 2004, divers in the U.S. are being asked to team up with dive buddies and park managers around the world in a campaign to support coral reef protected areas. Participating dive operators, clubs, and associations will organize fundraising events leading up to Earth Day (April 22), and the proceeds will pay for conservation projects at some of the world's most spectacular dive sites.

<http://www.coralreefalliance.org/divein/parkbuddy/> .

Coral Reef Conservation Program Web Site

The NOAA Coral Reef Conservation Program (CRCP) redesigned and updated its program website. The site contains several key sections including: News and Highlights, Funding Opportunities, and Outreach and Education, as well as background information about the program, subscription information for the program newsletter and contacts for media inquiries. This is a companion site to NOAA's Coral Reef Information System.

<http://www.coralreef.noaa.gov>

<http://www.coris.noaa.gov>

Coral Reef Education and Outreach Library

This international library is an online catalogue of tools and publications that can be used to increase awareness about coral reefs. Each entry in the library contains a brief description of the publication and information on how to obtain it. Some publications are available to download directly from the library. In the library you will find descriptions of: brochures, books, posters, fact sheets, materials from marine parks, teacher's guides, videos and other coral reef educational materials.

<http://library.coralreef.org>

<http://fmp.coralreef.org/library/home.htm>

<http://www.coralreef.org/tools/teachers.html>

Coral Reef Film Materials

The Great Barrier Reef Marine Park Authority (GBRMPA) worked with Disney Pixar® To develop a CD of educational materials related to the film *Finding Nemo*. The CD also contains "Fishy Facts" – short videos presenting basic life history information using clips from the movie. The GBRMPA ReefEd website also has many curricular materials, set to Australian educational standards. The MacGillivray Freeman Films'® *Coral Reef Adventure* Teacher's Guide has other downloadable film-related educational materials.

<http://www.FindingNemo.com.au>

<http://www.coralfilm.com/edu.html>

www.reefed.edu.au

Coral Reef Park Buddy Program - 2005

The Park Buddy Program aims to support coral park managers in their efforts to protect their biologically diverse and increasingly threatened reefs. The program offers ocean lovers the chance to directly support fundraising efforts for four urgent conservation projects. CORAL is launching its Park Buddy program as part of the annual Dive In To Earth Day event, held each year during the week of Earth Day, April 22nd.

<http://www.coralreefalliance.org/divein/parkbuddy/>

Coral Reef Report

This new online magazine has been launched to "celebrate the power and mystery of the planet's coral reefs." The Coral Reef Report features articles, personal stories, and audio interviews with scientists and others. The site also features a rotating photo gallery.

<http://coralreefreport.info> .

Coral Reefs: Canaries of the Sea DVD

The National Wildlife Foundation's Climate Change and Wildlife Program, with funding support from NOAA, has produced a multi-media DVD entitled *Coral Reefs: Canaries of the Sea*, narrated by Jack Hanna. The DVD will help raise awareness of the effects of global climate change and other serious environmental problems on coral reefs around the world. It also provides ideas about what people can do to help protect reefs.

glick@nwf.org

COSEE-West: A Center for Ocean Science Education Excellence

COSEE-West is a collaboration between the Universities of California Los Angeles and Southern California. COSEE-West is dedicated to three goals: Educating the public about oceans and their impact on their daily life and increasing general environmental

awareness; using ocean science as an incentive to increase general science literacy; and increasing the number of students that choose science and ocean science careers.
<http://www.usc.edu/org/cosee-west> .

Creating Coastal Stewardship Through Science Curriculum Guides

The Point Reyes National Seashore website hosts a wide range of educational materials. Of special note are seven curricular guides created by teachers for teachers to provide middle school students with the opportunity to observe natural processes at Point Reyes National Seashore, to encourage a greater interest in science and environmental stewardship. Pacific gray whales, northern elephant seals, and the San Andreas Fault, are highlighted.

http://www.nps.gov/pore/educate_curriculum.htm .

Creative Conservation E-Learning

This company designs, develops, and teaches professional development e-Learning programs to meet the needs of your organization. Each design is a unique blend of current e-Learning technologies and proven methodologies with an emphasis on learning. Courses include Designing for Distance, Project WILD, and Project Learning Tree professional development workshops.

<http://www.creative-conservation.com/index.htm>

Crittercam: See What the Animals See

What do marine animals do when we're not around? National Geographic's Crittercam allows researchers to follow wildlife through the use of advanced monitoring equipment attached to the animal. The Crittercam website has maps, lesson plans, and activities.

<http://www.nationalgeographic.com/crittercam/index.html> .

Cruises and Virtual Expeditions to the Charleston Bump

From August 2-13, 2003 scientists explored the Charleston Bump, a complex bottom feature of great topographic relief located southeast of Charleston, South Carolina. The rocky, erosion-resistant rise impedes the flow of the Gulf Stream, deflecting it offshore and creating a zone of gyrating eddies and swift, narrow currents. Background material, daily logs, photodocumentaries, a video gallery, and lesson plans are available.

<http://oceanica.cofc.edu/home.htm>

DataStreme Ocean Website

DataStreme Ocean is a semester-long distance-learning course for precollege teacher enhancement that is partially delivered via the Internet. It is an initiative of the American Meteorological Society/National Oceanic and Atmospheric Administration Cooperative Program for Earth System Education. The course website offers a comprehensive sampling of ocean information especially suitable for learning in an Earth system perspective.

www.ametsoc.org/amsedu/DS-Ocean/home.html .

Deep-Sea Creatures Quiz from National Geographic

Dive to the depths to test your knowledge of some of the Earth's most unusual creatures. Try this quiz and read the accompanying background information. And while you're on the website, check out the other games including weather wizard, frogs, and much more in the archives.

<http://magma.nationalgeographic.com/ngexplorer/0309/games/game.cgi> .

Digital Library of Earth System Education

The Digital Library of Earth System Education is creating an online library of educational resources and services to support Earth system science education at all levels in both formal and informal settings. A quick search on “marine” came up with 152 entries.

<http://www.dlese.org/>

Discovery Kits from NOAA’s National Ocean Service

NOAA’s National Ocean Service (NOS) Discovery Kits describe the scientific principles underlying NOS’s major programs. Each kit includes an on-line tutorial, a roadmap to resources, and a set of lesson plans. Each module of the kit is designed to work together, but comprehensive enough to be used on its own. Currently available kits include *Corals*, *Tides & Water Levels*, and *Geodesy/Global Positioning*. *Estuaries*, *Non-point Source Pollution*, and *Marine Archaeology* are in development.

<http://oceanservice.noaa.gov/education> .

Dive In To Earth Day

Dive In To Earth Day offers you the opportunity to take a stand for the protection of coral reefs, and raise global awareness about pressing conservation issues. Organize a beach or underwater cleanup, host an educational slideshow or film, conduct a fish survey, or raise funds for a marine protected area, by "Diving In" this Earth Day. 2003’s event garnered 270 activities, helping protect coral reefs and aquatic ecosystems in 58 countries and territories around the world. Register your event online at

http://fmpro.coralreefalliance.org/divein/reg_1.htm.

<http://www.coralreefalliance.org/divein/> .

Do L.A.P.’s for Michigan

The Michigan Department of Natural Resources provides its Millennium Education Project – great state, great parks, great history – L.A.P.’s (Learn from the past, Appreciate the present, and Preserve our outdoor heritage). Michigan fourth grade teachers and students have fun as they learn and explore through the L.A.P.’s characters. The website features a variety of resources, games, links, and a virtual tour of a different park each month.

<http://www.dnr.state.mi.us/edu/DNRIntroPages/DNRlaps.html>

The Dune Book

North Carolina Sea Grant offers a comprehensive book on sand dunes. This publication describes the benefits of dunes and dune vegetation, as well as the best dune management practices along developed shorelines where people, buildings and roads are already in place. It also describes how to select and plant the best dune grasses for the North Carolina coast and provides tips and colorful illustrations on the most common dune species.

http://www.vims.edu/bridge/index_geology.html .

Earth as Art: A Landsat Perspective

This exhibition from the Library of Congress showcases Landsat 7 images, from the collection of Landsat photographs held in the Geography and Map Division, which have been selected for aesthetic rather than scientific value. These images are actual pictures of the Earth, created by printing visible and infrared data in colors visible to the human eye. Band combinations and colors were chosen to optimize their dramatic appearance.

Included are striking photos of Aleutian clouds, the Everglades, the Ganges River delta.
<http://www.loc.gov/exhibits/earthasart/> .

Earth Exploration Toolbook

The Earth Exploration Toolbook is a collection of computer-based Earth science activities. Each activity, or chapter, introduces one or more data sets and an analysis tool to explore some aspect of the Earth system. Step-by-step instructions in each chapter walk users through a case study in which they access data and use analysis tools to explore issues or concepts in Earth system science. In the course of completing a chapter, users produce and analyze maps or other data products.
<http://serc.carleton.edu/eet/index.html>

EarthCare

This resource features online stories about conservation, earth and ocean stewardship, ecosystems, and more. It showcases the Earth & Sky radio spots, along with links for more information.
<http://www.earthsky.org/shows/earthcare> .

ECO Journeys Program through Creative Education

Creative Education provides hands-on experiences to teachers and students that focus on the interrelations between people and their natural environment. Their goal is to inspire exploration, conservation, and the integration of broadened perspectives into local communities and daily lives. ECO (**E**xplore the **C**ulture and **O**cean) Journeys are field programs where students snorkel coral reefs and mangroves, assist researchers with fish surveys and aquaculture projects, work with a local fisherman, and much more.
www.creativeed.org/ECOhome/fieldprograms.htm

Economic Values of the World's Wetlands

This report highlights the high economic value of functioning wetlands. Seventy billion U.S dollars worth of goods and services from freshwater resources could be at risk annually if governments fail to manage their wetlands sustainably.
<http://www.panda.org/downloads/freshwater/wetlandsbrochurefinal.pdf>

Ecoventures: Focus on the Gulf

EcoVentures: Focus on the Gulf is a multimedia CD designed to help middle school students learn about the Gulf of Mexico's aquatic environment and the issues associated with protecting and managing aquatic resources. Students enter the world of a fictional National Park to explore a variety of ecosystems and develop a management plan for the park. There are on-line activities, expert consultants, and a video encyclopedia.
<http://eea.freac.fsu.edu> .

EDGES: Using GIS to Experience Sanctuaries

Channel Islands, Florida Keys, Gray's Reef, and Stellwagen Bank National Marine Sanctuaries have teamed up to utilize real scientific data in educational materials for teachers and students to explore America's special ocean areas. **E**xploring **D**ata using **G**eographic Information Systems to **E**xperience **S**anctuaries (EDGES) lessons include underwater treasures, submerged lands, and monitoring from afar. Contact Sanctuary.Education@noaa.gov .

Edmonds Discovery Programs

This website contains information about marine life and local Puget Sound ecosystems, and provides downloadable curriculum. The site features a marine life guide and a Beach Etiquette Pledge.

http://www.ci.edmonds.wa.us/Discovery_Programs%20Website/index.html

Education for a Sustainable and Secure Future Recommendations Online

The final report of the Council for Science and the Environment for recommendations for educational reform for the U.S. can be read online. The recommendations address topics such as sustainability and security curricula for K-12 and undergraduates, community education, and planetary health.

<http://www.NCSEonline.org/NCSEconference/2003conference/>

Educator Resources from the California Department of Fish & Game

The California Department of Fish and Game, Office of Natural Resource Education, has a variety of web-based resources for educators. These include a Project WILD Aquatic online workshop, the first offering from a marine curriculum, and a newsletter with educational materials, kid's activity, and regional and local events.

<http://www.dfg.ca.gov/coned/index.html> .

Educator's Guide to Nonpoint Source Water Pollution

The Kentucky Waterways Alliance provides a downloadable manual with hands-on lesson plans and activities relating to Kentucky's water and nonpoint source pollution. Students will gain an appreciation of the environmental sensitivity of water quality, explore the relationships of hydrologic components within a watershed, understand how human activities can affect the watershed, and learn responsible water resource management. Most of the activities are interdisciplinary.

www.kywater.net/KWA/splas01.doc

EETAP Resource Library

The EETAP Resource Library, now moved to EE-Link, makes environmental education resources more accessible. A major component of the Library is Info-Sheets, 1-2 page descriptions that summarize a specific EE topic and identify resources for additional reading.

<http://eelink.net/eetapresourcelibrary.html> .

eField Trips for Fall

Take your class on a field trip to Biscayne National Park to participate in an underwater adventure, to the freshwater wetlands of Watsonville, to the volcanoes of Hawai'i, or for a visit with Florida manatees. All trips have four major components: a virtual visit, an interactive multi-media web experience that your students can complete at their own pace anytime; a Trip Journal, a short worksheet that students complete as they complete the Virtual Visit, Ask the Experts, and specific times for a Live Web Chat.

www.eFieldTrips.org .

E-Field Trips on Invasive Species, Alaskan Coast Invertebrates, and Shorebirds

During April 2004, the National Wildlife Refuge System is offering the eFieldTrip titled, *Invasive Species: America's Least Wanted!*, geared toward 4-6th grade students.

Students will have the opportunity to learn about invasive species and why they are a menace. The eFieldTrip has four interactive components allowing students to complete the program at their own pace. There is no cost for schools or students to participate.

http://www.efieldtrips.org/Schedules/schedule_0404.cfm .

Electronic Naturalist

The Electronic Naturalist is an on-line education program providing a weekly environmental education unit. Each unit has artwork, text, activities, additional web sites, plus online access to a professional naturalist. Two reading levels are available for grades K-3 (Quick Read) and 4-8 (Full Read). The units cover insects, fish, amphibians, reptiles, birds, mammals, plants, and environmental issues.

<http://www.enaturalist.org/index.htm> .

Energy for Keeps – Electricity From Renewable Energy

Energy for Keeps is a comprehensive renewable energy publication for middle and high school education that covers the history, availability, impacts, technologies, and management of the resources that are used to generate electricity. Activities have been correlated to National Science Standards. It is available as a free download from the producers, Educators for the Environment.

<http://www.energyforkeeps.org/> .

Environment and Global Climate Change

The University of the Arctic offers an "Introduction to the Circumpolar World" module for students grades 9-12 addressing climate change and potential environmental changes in the Arctic.

http://www.uarctic.org/bcs/BCS100/bcs100_m6.pdf

Environmental Education Capacity Building Publications Survey

The National Environmental Education Advancement Project (NEEAP), funded through Environmental Education and Training Partnership (EETAP), has an online survey that seeks to document the value and use of various EE publications by those involved in EE capacity building efforts at the national, state and local levels. Your time and advice is greatly appreciated.

<http://www.uwsp.edu/cnr/neeap/publications/pubsurvey.htm> .

Environmental Education In Georgia Website

The EEinGEORGIA.org website provides: EE lesson plans based on Georgia's Quality Core Curriculum standards, a searchable directory of Georgia's EE providers and the resources they offer, a statewide calendar of EE events, EE news, and easy-to-access facts about Georgia's environment. It also hosts an interactive GIS map of EE providers in the state.

<http://eeingeorgia.org/net/go/default.aspx?siteid=4863>

Environmental Education in New Zealand Schools

A four-volume report highlighting research on environmental education practice provides lessons for school-based development of New Zealand curriculum for programs in special focus areas, and is meant to serve as a resource for schools who want to develop their own environmental education programs. The report, Environmental Education in New Zealand Schools: Research into Current Practice and Future Possibilities, is from the New Zealand Council for Educational Research and Waikato University.

www.minedu.govt.nz/goto/eereports .

Environmental Education Program, Lee County

Lee County, Florida, stretches from the shell-strewn beaches of Sanibel Island to the deep green of Six Mile Cypress Slough. The long history of the Environmental Education Program includes national recognition and awards from the National Science Teachers Association as one of the ten best Environmental Education programs in the US. Components of the program include the Aquatic Systems/ Mosquito Control program, Estuary Animals and Mudflats field trip, and Six Mile Cypress Slough wet field trip.
www.lee.k12.fl.us/dept/ee/ .

Environmental Education Works

The EE-works is a service of the National Environmental Education and Training Foundation (NEETF). The website hosts data, studies, and case examples of how environmental education has a measurable impact on environmental protection and improved student learning include better results on standard tests.
<http://www.theeworks.org/> .

Environmental Film Festival - Washington DC

The 13th annual Environmental Film Festival in the nation's capital, March 10-20, 2005, in Washington, DC, will screen 90 documentary, feature, animated, archival, and children's films. Screenings are enhanced by discussion with scientists and filmmakers, and many are free. The complete film schedule will be posted on the website later this month.
<http://www.dcenvironmentalfilmfest.org/index.html>

Environmental Inquiry from Cornell University

Environmental Inquiry is a website and curriculum series developed at Cornell University to help students conduct environmental science research and participate in communities of fellow student scientists. Students learn specific research protocols and then conduct interactive research projects. The four-part Cornell Scientific Inquiry Series includes Watershed Dynamics, Assessing Toxic Risk, Invasion Ecology, and Decay and Renewal.
<http://www.dnr.cornell.edu/ext/Ext/NATURAL%20RESOURCES%20PUBLICATIONS.pdf>
<http://ei.cornell.edu/> .

Environmental Science Teacher Exchange

The Environmental Literacy Council's website teacher exchange allows educators to share labs, activities, and ideas with colleagues online. The topics are drawn from the College Board's suggested labs and field investigations for the AP environmental science course. There are lesson plans, classroom curricula, and an AP Environmental Science course outline. Find the marine-oriented offerings under *Teaching Resources*.
<http://www.enviroliteracy.org/category.php/17.html>

Environmental Science: Understanding Our Changing Earth Curriculum – Request for Pilot Teachers

The American Geological Institute seeks up to 12 experienced science teachers in grades 9 through 12 to pilot test their comprehensive *Environmental Science: Understanding Our Changing Earth* curriculum in the fall semester of the 2004-2005 school year. The draft outline of curriculum and chapter headings are on the website and include watersheds and coastal processes.
<http://www.agiweb.org/education/hses/pilottest/index.html> .

EPA Water Quality Booklet

The kids' water quality booklet, *What's Up with our Nation's Waters?* (EPA 841-F-02-002), is ready for distribution. Order individual copies from NSCEP at 1-800-490-9198 or request larger quantities by email at ncepiwo@one.net. The website highlights earlier versions.

<http://www.epa.gov/owow/monitoring/nationswaters/>

Erase the Waste Action Kit

From the California State Water Resources Control Boards' comes the Erase the Waste campaign, providing a number of resources and information on simple every day actions steps to stop pollution at the source. It includes tips on creating a trash-free cleanup event, adopting your local park or neighborhood as a trash-free zone. Also included are materials about pollution prevention, sample media materials, and a directory of additional resources. Available in English, Spanish, Chinese, Korean, and Vietnamese.

<http://www.erasethewaste.com/> .

ESRI Map Book Offer

ESRI, a GIS software company, offers copies of the ESRI Map Book Volumes 16 and 17 for the cost of shipping only, \$3.00 per book. Volume 16, *Geography—Creating Communities*, reproduces color digital maps produced in 2000, including images of seafloor topography and geologic analysis of Mars and Venus. Volume 17, *Geography and GIS--Sustaining Our World* features stories from more than 20 disciplines.

bmanion@esri.com

Essential Science for Teachers from the Annenberg/CPB Channel

Life Science, premiering March 3rd on the Annenberg/CPB Channel, is the first in a three-part course series *Essential Science for Teachers*. These courses help K-6 teachers understand science concepts needed to teach a standards-based curricula. Real-world examples, demonstrations, animations, still graphics, and interviews with scientists enrich content segments. Upcoming modules includes *Variation, Adaptation, and Natural Selection*; *Material Cycles in Ecosystems*; and others.

<http://www.learner.org/redirect/february/lifescience1.html> .

Estuary Live: 2004

National Estuaries Day is a Coast Week celebration to promote the importance of estuaries and the need to protect them. This year's program will include field trips to seven estuaries: Puget Sound, Slough Slough, Weeks Bay, Rachel Carson Reserve, Great Bay, Peconic Estuary, and Waquoit Bay. Visit the website for the education topics and standards; additional information and teaching materials will be posted soon.

www.estuaries.gov .

Estuary Live! 2003

National Estuaries Day, an interagency campaign to promote the value of estuaries and the need to protect them, was celebrated September 27, 2003. The feature event for National Estuaries Day is *EstuaryLive*, an interactive Internet journey through estuaries for students of all ages. Naturalists and students tour different estuaries, and web participants interact with the tour guides by emailing questions during the field trips.

www.estuaries.gov and <http://www.estuarylive.org/>

Estuary Live - Celebrate National Estuaries Day 2004

Take your students on a tour of estuaries of the United States by participating in the EstuaryLive interactive webcast. National Estuaries Day, September 25, 2004, is an annual celebration of the magical places where fresh water from rivers mix with salt water from the ocean. EstuaryLive kicked off the celebration on September 23 and 24 by bringing free, live, interactive, Internet field trips in seven different estuaries around the country right to your classroom.

www.estuaries.gov

EurekaAlert! Marine Science Portal

The American Association for the Advancement of Science (AAAS) has an online news service called EurekaAlert! The online Marine Science Portal includes a calendar of events, links to marine science resources, press releases, and more. It offers marine science information from universities, research institutes, and other organizations engaged in all aspects of marine science research.

<http://www.eurekaalert.org/marinescience/> .

Exploring Climate Change Impacts Curriculum Guide

The Union of Concerned Scientists has produced a *Global Warming: Early Warning Signs* map and teaching materials geared towards students and teachers in grades 9-12, exploring the local and regional consequences of global climate change.. Individual exercises are adaptable to different grade levels and engage students in an exploration of the impacts of global climate change on ecosystems and natural resources.

<http://www.climatehotmap.org/> .

Extreme 2004: Expedition To The Deep Frontier

University of Delaware marine scientists will lead *Extreme 2004: Expedition to the Deep Frontier*, from November 30-December 20, 2004, a National Science Foundation expedition to hydrothermal vents in the Pacific Ocean. Middle- and high-school classrooms are invited to join via a virtual field trip. The University of Delaware will offer participating teachers free classroom materials about the deep sea, including student resource guides, curricula, a video, and more.

<http://www.ocean.udel.edu/expeditions> .

Extreme 2003: To the Depths of Discovery

This website from Delaware Sea Grant highlights an expedition from November 29 - December 21, 2003. Expanded curricula have been developed for both middle and high school, and a new evaluation is in place.

<http://www.ocean.udel.edu/extreme2003>

Farming the Seas

Habitat Media, the California-based non-profit media production house, creators of *Empty Oceans*, *Empty Nets*, is offering *Farming the Seas* to marine and environmental educators, zoos and aquariums for screening at upcoming events during the summer and fall of 2004. *Farming the Seas* explores what's at stake as the aquaculture industry spreads across the globe. The film highlights ground-breaking efforts by scientists, communities and industry to develop viable, sustainable operations.

www.habitatmedia.org .

rivkahbeth@habitatmedia.org .

Federal Education Digital Resources Library

The Federal Education Digital Resources Library (FEDRL) features a collection of free science and mathematics education resources. The site provides descriptions of a range of online materials that were developed with U.S. Department of Education or National Science Foundation funding. These materials include lesson plans, magazine articles, student resources, and materials for teachers' professional development.

<http://encdl.org/search/simple/0.5046..00.shtm> .

Federal Resources for Educational Excellence (FREE) Website

The FREE website makes it easy to find teaching & learning resources from more than 40 federal organizations. A new search produces more precise results. Descriptions of resources are available throughout the site. New topic pages highlight information about literature, biology, geography, U.S. government, and more.

<http://www.ed.gov/free/index.html>

Federal Science Website

A federal website makes scientific information gathered by different agencies accessible to the public. The site is an offshoot of Firstgov.gov, housing information under one roof from the multiple agencies that perform scientific research.

www.science.gov

Fish Research of Interest to Students

Use the article at this website when you want to show your students you can be on the same "wav"-length as they are. Scientists studying underwater fish acoustics have identified another possible mechanism herring use to communicate.

<http://www.newscientist.com/news/news.jsp?id=ns99994343>

Fish Species Identification and Data Programme

The UN's Food And Agriculture Organization (FAO) website for [fish] Species Identification and Data Programme is set up to improve the identification of marine organisms of actual and potential interest to fisheries, provide tools, and improve fisheries data quality. The website has species identification publications, regional guides, fact sheets, species distribution maps, and more. Many of the publications are downloadable.

<http://www.fao.org/fi/SIDP>><http://www.fao.org/fi/SIDP> .

FishBase

FishBase, developed by the WorldFish Center in collaboration with the UN Food and Agriculture Organization (FAO), is a global source for research on living aquatic resources. The site contains information on 28,400 fish species, as well as 35,900 pictures and 32,800 references. Check out the quiz section.

<http://www.fishbase.org/home.htm> .

Fishing for Answers: Making Sense of the Global Fish Crisis

The goal of *Fishing for Answers* is to provide easily digestible but comprehensive fisheries information for consumers and policymakers. This report will allow consumers to make links between what they eat and the effect on the ecosystem and fishers globally, as well as to stimulate dialogues among environmentalists, the fishing industry, and consumers. The executive summary is currently available, and the full print version will be made available soon.

http://water.wri.org/pubs_pdf.cfm?PubID=3866

Floating Classroom for Educators and Students - Texas

On the R.V. Karma, a 57-foot teaching and research vessel, students can use otter trawls, plankton nets, water samplers and test kits, bottom corers and video-enhanced microscopes to investigate topics such as marine biology, ecology, fisheries and environmental impact. Additional initiatives include Elderhostels, youth development camps and courses, marine education workshops and professional development, and short courses for informal educators.

<http://extensioneducation.tamu.edu/karma.htm> .

Florida Office of Coastal and Aquatic Managed Areas Interactive Map

The Florida Department of Environmental Protection's Coastal and Aquatic Managed Areas manages nearly five million acres of submerged lands. These include Aquatic Preserves, National Estuarine Research Reserves, and the Florida Keys National Marine Sanctuary. The website includes an interactive map of the entire state, broken down into regions.

<http://www.dep.state.fl.us/coastal/sites/default.htm> .

Flow: The Essentials of Environmental Flows

IUCN and its *Water and Nature Initiative* published a new guide to "environmental flows" –the water regimes provided within a river, wetland or coastal zone to maintain ecosystems and their benefits where there are competing water uses and where flows are regulated. *Flow* includes chapters on international legal instruments, defining water requirements, covering costs, and building capacity.

<http://www.waterandnature.org/flowlaunch.html>

Flying WILD

Flying WILD is a new initiative from the Council for Environmental Education that extends upon Project WILD by providing resources and guides for School Bird Festivals in conjunction with International Migratory Bird Day. The program allows students the opportunity to get involved in learning through researching, planning, and hosting a bird festival at their school. Flying WILD is sponsored by the National Fish and Wildlife Foundation and Phillips Petroleum Company.

http://www.projectwild.org/flying_wild/overview.htm

Forest Service Partnership Resource Center

The Partnership Resource Center is a centralized website from the Forest Service to provide information and tools to promote partnerships. The website includes resource documents, links to training opportunities and funding sources, tools and templates, and lists of organizations and agencies which work collaboratively and in partnerships to manage natural resources.

<http://www.partnershipresourcecenter.org/index.shtml> .

Free Use of Camping Equipment Through The REI Gear Bank

The REI Gear Bank is a program designed to facilitate a positive introduction to the outdoors for kids who have not yet had a wilderness experience. In order to ensure that their first experience in the outdoors is a positive one, REI has set up a program to provide kids with quality gear so they are comfortable and can focus on having fun. The Gear Bank offers camping essentials free of charge.

relion@rei.com

From Shore to Sea: Exploring California's Channel Islands

The JASON Project combines scientific expeditions, standards-based classroom curriculum, and accredited professional development for teachers to engage students in science, math, and technology, and to deliver measurable gains in student achievement. *From Shore to Sea* focuses on the Channel Islands and the surrounding sea. Monitor change with standards-based lesson plans covering geography, natural history, culture, watersheds, kelp forests, marine conservation and much more.

<http://channelislands.noaa.gov/edu/shoretosea.html> .

Gateway to Educational Materials

The Gateway to Educational Materials offers a database of more than 24,000 education resources, including marine resource education, across more than 400 web sites.

<http://thegateway.org/>

GEO Year Book 2003

The United Nations Environment Programme (UNEP) presents its first annual Global Environment Outlook (GEO) statement to highlight significant environmental events and achievements during the year and raise awareness of emerging issues from scientific research and other sources. Based upon a collaborative/comprehensive tracking and stocktaking process established with many partners, it includes an overview of major global and regional environmental issues, a focus on freshwater, indicators and more.

<http://www.unep.org/geo/yearbook/> .

Geographic Data in Education (GEODE)

The Geographic Data in Education (GEODE) Initiative, for middle school through college, uses data visualization and analysis tools to support inquiry-based learning. An integrated program of research and development, the GEODE Initiative provides curriculum, educational software, and teacher professional development. Software includes *WorldWatcher* and *My World*. Curriculum includes *Looking at the Environment* and *Planetary Forecaster Project*.

<http://www.worldwatcher.northwestern.edu/> .

Georgia's Amazing Coast

Fun and learning come together in *Georgia's Amazing Coast*, a collection of one hundred short, self-contained features about the flora, fauna, and natural history of Georgia's coast. Each page includes a full-color illustration and fact-filled commentary on coastal wildlife, from fifty-foot-long northern right whales to single-cell plankton.

Contact Allison Reid at areid@ugapress.uga.edu for details.

Georgia Encyclopedia

The New Georgia Encyclopedia provides an accessible, authoritative source of information about people, places, events, historical themes, institutions, and many other topics relating to the state. It includes a section on Land and Resources, including articles and information on ecological functions of the environment, environmental regions of Georgia, and more.

www.georgiaencyclopedia.org .

Georgia High School Envirothon

The Envirothon is a hands-on, high school academic competition on the environment. Teams exercise their training and problem-solving skills in a competition centered

around five topics: soils/land use, aquatic ecology, forestry, wildlife, and a current environmental issue. There are three levels of competition. The regional competition is a one day event, while the state competition is a 2-day event. There is also Eco-Meet, a middle grades academic competition on the environment modeled after the Envirothon. www.georgiaenvirothon.org .

Geospatial One-Stop Portal

The Geospatial One-Stop portal helps the public and government agencies access geospatial data and other information from one centralized location. NOAA manages the *Oceans and Estuaries* and *Locations and Geodetic Networks* channels on the portal, and co-manages the *Atmospheric and Climate* channel. <http://www.geodata.gov/gos>

Getting in Step: a Guide to Effective Outreach in Your Watershed

The *Getting in Step* guidebook or on-line web-based training module provides some of the tools needed to develop and implement an effective watershed outreach plan. It helps watershed practitioners trained in the sciences address public perceptions, promote management activities, and inform or motivate stakeholders. <http://www.epa.gov/owow/watershed/outreach/documents/>

Ghost Crab Trap Removal Program

The Barataria-Terrebonne National Estuary Program is supporting this Department of Wildlife and Fisheries' program through a ghost trap "sweep" within the Barataria-Terrebonne National Estuary, planned for February 28 through March 14, 2004. A ghost crab trap may be an old, bent, barnacle-encrusted trap without a buoy or float, or even be a relatively new trap with a line and buoy still attached (sometimes referred to as "derelict" traps). <http://www.blue-crab.net/derelict.html> .

GIS Day 2003

GIS Day, Nov. 19, 2003, is part of the National Geographic Society's initiative, Geography Action, a year-long initiative encompassing key educational achievements. The theme of this year's Geography Awareness Week, November 16-22, 2003, is "Habitats." <http://www.gisday.com/index.html>

Global Amphibian Assessment

The Global Amphibian Assessment is a comprehensive assessment of the conservation status of the world's 5,743 known species of frogs, toads, salamanders, and caecilians. This website presents results of the assessments, including IUCN Red List threat category, range map, ecology information, and other data for every amphibian species. <http://www.globalamphibians.org/>

Global Biodiversity Information Portal

The Global Biodiversity Information Facility (GBIF) is an international non-profit organization devoted to providing free and universal access to data regarding the world's biodiversity. Check out the GBIF Communications Portal at www.gbif.org . Many countries and organizations participate in GBIF and have made their data available at the GBIF Data Portal. www.gbif.net .

Global Ultraviolet Index

EPA and NOAA adopted a new Global Ultraviolet Index to help reduce overexposure to dangerous UV rays. The index, developed by the World Health Organization and other international organizations, replaces existing reporting methods. The index is designed to foster understanding of which precautions to take in protecting ourselves from different levels of UV radiation.

http://www.cpc.ncep.noaa.gov/products/stratosphere/uv_index/uv_current.html or <http://www.epa.gov/sunwise/uvilaunch.html> .

GLOBE moves to Boulder, CO

The GLOBE Program now resides at the University Corporation for Atmospheric Research, in Boulder, Colorado. GLOBE is a worldwide hands-on, primary and secondary school-based education and science program. Internationally, GLOBE is a partnership between the United States and 100 other countries.

<http://www.gsfc.nasa.gov/news-release/releases/2003/h03-087.htm>

Google Scholar - Free Search for Online Academic Documents

The Internet search organization Google has released a new tool called "Google Scholar" that allows you to look up any author, publication, or technical topic and find all of the other articles or websites that cite that work. Google Scholar enables you to search specifically for scholarly literature, including peer-reviewed papers, theses, books, preprints, abstracts, and technical reports from all broad areas of research.

<http://scholar.google.com>

GPA Marine Email Newsletter

The GPA is the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, for which the United Nations Environment Programme (UNEP) provides the secretariat. Monthly GPA Outreach newsletters and weekly GPA News Updates are a new source of information about related events and information relevant to the wider marine and freshwater sector. To subscribe to GPA Outreach, send an e-mail to join-gpa-outreach@lists.healthdev.org .

GPA Outreach Online Debate

The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) hosted an interactive online debate as part of GPA Outreach, March 8-17, 2004. The debate focused on *Water Management and Governance* and *Perspectives on Water and Poverty Reduction*.

<http://www.unedforum.org/debate/> .

Graduation Pledge of Social and Environmental Responsibility

The Graduation Pledge of Social and Environmental Responsibility states, "I pledge to explore and take into account the social and environmental consequences of any job I consider and will try to improve these aspects of any organizations for which I work." Students at over a hundred colleges and universities, ranging in size from Whitman to Harvard, have used the pledge at some level.

<http://www.graduationpledge.org/> .

Graveyard of the Pacific: The Shipwrecks of Vancouver Island

The Virtual Museum of Canada explores the various shipwrecks that have taken place around Vancouver Island, off the mainland of British Columbia, from the year 1803 to the

present day. Read tales of survival from these vessels, view an interactive map of the shipwrecks, and learn about the various hazards associated with the waters off Vancouver Island. Check out the interactive game called "Wrecks."

<http://www.pacificshipwrecks.ca/english/index.html>

Gray's Reef Brought to Atlanta Through Distance Learning

Through Georgia's distance learning program, Gray's Reef National Marine Sanctuary educators teach and interact live with typically three and as many as seven classes across the state and nation simultaneously. With slides and video footage, they bring Gray's Reef to students from downtown Atlanta and the peanut farming communities of Plains to the mountains of New York and desert of Arizona.

<http://www.graysreef.nos.noaa.gov/education.html>

Great Lakes Invasive Species Information, Activities, and Curriculum Guide

Illinois-Indiana Sea Grant provides a wealth of Great Lakes environmental education on their website, with a focus on invasive species. The Biological Resources page links to aquatic invasives activities and resources, while Water Quality links to many useful classroom resources and information. Down-load *The Great Lakes Invasive Species Curriculum Guide* to provide students an introduction to aquatic invasive species.

<http://www.iisgcp.org/edu/br/grlksinv.pdf>. <http://www.iisgcp.org/edu/> .

Green Conference Guide from EECOM

From the Canadian Network for Environmental Education and Communication (EECOM), this online guide can help make your next conference or meeting greener.

<http://www.eecom.org/english/greenconf.html> .

Guides to the Species of the ACE Basin, South Carolina, and Coastal Habitats of Rhode Island

The Ashpoo-Combahee-Edisto (ACE) Basin of South Carolina has a largely undeveloped landscape with diverse habitats, with more than 1500 different plant and animal species that interact with the physical environment to create the ACE Basin ecosystem. The Internet-based Species Gallery highlights birds, fish, invertebrates, mammals, plants, and reptiles that make their home in the ACE Basin.

<http://www.dnr.state.sc.us/marine/mrri/acechar/specgal/birds.htm> .

Rhode Island is home to an array of coastal habitats, including salt marshes, seagrass beds, and river systems which contribute greatly to the state's biological integrity and diversity and help support the state's economy. Rhode Island's Habitat Restoration Portal hosts an Internet-based Species Gallery of anadromous fish, seagrass, and salt marsh habitats highlighting invertebrates, birds, fish, and plants found there.

<http://www.edc.uri.edu/restoration/html/gallery/seagrass.htm>

A Guide to Understanding a Sense of Place

The free *Guide to Understanding a Sense of Place* (publication number EPA 842-B-01-003) explores the concepts of community and culture and provides tools for identifying, assessing, and working cooperatively within the social dynamics and local values connected to environmental protection. The guide is designed for people involved in community-based initiatives.

<http://www.epa.gov/ncepihom/index.htm>

Gulf Facts

Visit the Gulf of Mexico Foundation website for information about the Gulf of Mexico. Representing a wide range of interests (agriculture, business, fisheries, industry, tourism, and the environment), the Foundation promotes and funds research, education, and conservation programs. The focus area encompasses all areas bordering the Gulf. The website covers geography, resources, history, environmental concerns, education, and more.

<http://gulfmex.org/facts.htm> .

Gulf of Alaska with NOAA Ocean Exploration

The Gulf of Alaska 2004 Expedition from NOAA's Ocean Exploration, July 30-August 23, 2004, explored five large seamounts located approximately 200 miles off the Alaska coast. Scientists will focus their investigations on seafloor aging and characterization, deep-sea coral genetics, and community ecology. The website hosts essays and lesson plans that tie directly to the expedition, developed for students in Grades 5-12. Logs, Ask an Explorer, videos, and more were added during the expedition.

<http://oceanexplorer.noaa.gov/explorations/04alaska/welcome.html> .

Habitat Connections

The Fisheries Office of Habitat Conservation has re-launched their quarterly newsletter, *Habitat Connections*. The next three issues will focus on oyster habitat around the nation.

Laura.Walko@noaa.gov

Hands on the Land

Hands on the Land is a network of field classrooms stretching across America from Alaska to Florida and is sponsored by Partners in Resource Education, a collaboration of federal agencies, and other partners. Hands on the Land provides a national network of field classrooms, both inland and coastal, to enhance kindergarten through high school student-learning. The website provides teaching materials, resources for students, educational program information, teacher bulletins and more.

<http://www.handsontheland.org> .

Herpetology of Porto Rico

The classic herpetology publication of Leonhard Stejneger is available for downloading online. This book was published in 1902 and it includes drawings of the species as well as new species descriptions. It's a great resource to compare and contrast with some of the available herpetology web offerings.

<http://www.coqui.pr.com/herppr/>

High School Environmental Center Website from EPA

This EPA website helps high school students explore and learn about their environment and ways to protect it. The website helps high school students find reliable environmental information, not just on EPA's website, but through other links as well. It links to air and water issues, waste and recycling, conservation, health and safety, ecosystems, and community environmental conditions.

www.epa.gov/highschool/

High Tides Documentary

The Weather Channel presents *High Tides*, a 30-minute special, part of the cable channel's Forecast Earth series. The documentary covers land subsidence and storm surges along the Louisiana coast, flooding along the Maryland coast after Hurricane Isabel, and the use of air gap and tide station technology in Tampa Bay. It also tracks the historical use of tide predictions and how modern technology provided by NOAA has improved our understanding of tides.

Historical Happenings at Fish & Wildlife

The U.S. Fish and Wildlife Service offers a monthly e-newsletter with notes on cultural resource management in the Fish & Wildlife Service. The newsletter contains news of note, training opportunities, and requests for information.

eugene_marino@fws.gov

Hitchhikers Guide to Exotic Species

The Massachusetts Institute of Technology Sea Grant Program has produced the Hitchhikers Guide to Exotic Species. The guide contains color photographs and information on several introduced species that can be found along the New England coast, as well as some native species for comparison purposes, and is printed on waterproof paper.

<http://massbay.mit.edu/>

Hofstra University Marine Lab Handbooks

St. Ann, Jamaica-based Hofstra University Marine Lab has developed an array of handbooks available free upon request. The handbooks vary in length and complexity, and have been written to help with lectures, field trips, student projects, and tourist activities.

http://people.hofstra.edu/faculty/john_f_morrissey/HUML/Handbooks.htm .

Holbrook Global Field Expeditions

Lifelong learners may consider joining one of these international environmental workshops for teachers or field programs for students. In collaboration with state, national and international partnerships, these programs are designed to offer the opportunity to explore topics focused on environmental literacy. The field-based learning seminars travel to Hawaii, Galapagos Islands, and other locations.

<http://www.holbrooktravel.com/pages/educationExpeditions/default.aspx>

Holiday Tips—Environment-Friendly

Eco-friendly tips for the holiday season:

<http://www.use-less-stuff.com/ULSDAY/42ways.html>

<http://www.earth911.org/master.asp?s=misc&a=misc/xmas/holiday.html>

<http://www.nwf.org/backyardwildlifehabitat/seasonaltips.cfm>

<http://www.ciwmb.ca.gov/PublicEd/Holidays/NoWaste.htm>

<http://www.care2.com/channels/solutions/home/343>

Ichthyology & Other Slimy Words

The Cabrillo Marine Aquarium, San Pedro, California, offers public classes, marine laboratory workshops, field trips, and voyages for all ages. Their *Ichthyology & Other Slimy Words* workshops allow you to explore the inner and outer workings of sharks and

other fish through dissection, fish printing, and more. Two sessions are offered, July 19-23 and August 23-27. They also provide many other programs.

<http://www.cabrilloaq.org/education.html> .

iLoveSchools.com

iLoveSchools.com is a free matchmaking service for education. School teachers request materials and supplies while school supporters search for a school in need of their gifts of money, new or used goods or other educational supplies. iLoveSchools.com supports any institution that educates children, including pre-schools, home schools and private schools.

<http://www.iloveschools.com/index.php> .

In the Deep Ocean

The Ocean Technology Foundation (OTF) has a new science center exhibit, *In the Deep Ocean*. The exhibit explores the past, present and future of our oceans. Its centerpiece is a 12-foot interactive model of an undersea station called Ocean Base, where people can live for weeks or months at a time. This habitat is one of OTF's long-term goals.

Watch for curriculum related to Ocean Base on the website in the future.

<http://www.virtualtour.semapp.org> .

Information and Communication Technology Literacy Map

The National Science Teachers Association and the Partnership for 21st Century Skills, have released a Science Information and Communication Technology (ICT) Literacy Map. The guide demonstrates how educators can develop science lessons that combine learning skills such as information and communication skills, with tools such as the Internet and multi-media production tools. It guides K-12 educators through a wide range of learning skill examples, and cites specific student outcome examples.

<http://www.21stcenturyskills.org/matrices/default.asp>

Information Center for the Environment – Biological Inventory of the World's Protected Areas

The Information Center for the Environment, in cooperation with the United States Man and the Biosphere program, the Man and the Biosphere program of the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and others, has produced databases containing documented, taxonomically standardized species inventories of plants and animals reported from the world's protected areas, with separate links for Biosphere Reserves, and another for all Protected Areas reported.

<http://www.ice.ucdavis.edu/bioinventory/bioinventory.html>

Impacts of a Warming Arctic: Arctic Climate Impact Assessment

In the Arctic Climate Impact Assessment, an international team of 300 scientists has determined that the Arctic is warming at nearly twice the rate as the rest of the planet. Increasing greenhouse gases from human activities are projected to make it even warmer, according to the four-year scientific study of the region.

<http://amap.no/acia/>

Interactive Estuary Poster

Check out this new feature on the Padilla Bay National Estuarine Research Reserve education web site. To access it, select Education, then the Kids Page. Move the cursor around to an animal or plant to bring up more information about it.

www.padillabay.gov .

Inter-American Biodiversity Information Network

The IABIN was created in 1996 as an initiative of the Santa Cruz Summit of the Americas meeting of Heads of State. Steadily gaining momentum, there are now 34 countries in the Americas that have officially named IABIN focal points. The website has extensive links to biodiversity databases, a search engine (both under tools), and other information.

<http://www.iabin.net/defaulteng.html> .

International Brant Monitoring Project

The International Brant Monitoring Project monitors the migration of a small sea goose, the brant. Project participants gain a greater understanding of the importance of local ecosystems and global environmental health through the observation of brants and sharing of information between participants in three countries. The project brings together participants that include students, wildlife biologists, national estuarine research reserves, the U.S. Fish and Wildlife Service and others along the Pacific flyway.

<http://www.padillabay.gov/brant/index.html> .

<http://www.padillabay.gov/educationcurriculum.asp> .

International Coastal Cleanup

The International Coastal Cleanup, September 18, 2004, sponsored by the Ocean Conservancy, is the world's largest one-day volunteer effort on behalf of the marine environment. In 2003, more than 450,000 people from all 55 U.S. states and territories and over 90 countries around the world participated in the cleanup, collecting over 7.55 million pounds of marine debris. Volunteers also found 237 entangled animals last year, emphasizing the dangers that marine debris plays in the coastal environment.

<http://www.coastalcleanup.org/index.cfm> .

International Coral Reef Information Network

The Coral Reef Alliance (CORAL) manages the Coral Reef Education and Outreach Library as part of the International Coral Reef Information Network (ICRIN), the communications arm of the International Coral Reef Action Network. ICRIN provides internet resources for coral reef conservationists and houses a royalty-free Photobank and the International Directory of Coral Reef Organizations.

<http://www.coralreef.org>

International Society for Reef Studies

Located within the Florida Institute of Technology, the International Society for Reef Studies (ISRS) is designed to disseminate its findings on both living and fossil coral reefs. "Reef Encounters" (right side, pull-down menu) will give an overview of some of the projects the organization is currently working on.

<http://www.fit.edu/isrs/>

Invasive Species Lectures On-Line

The Virtual Library of the American Institute of Biological Sciences contains plenary lectures by biologists recorded at AIBS annual meetings. Additional content includes presentations from the AIBS National Roundtable series. You can view synchronized audio and video of all presentations, plus slides and transcripts of presentations. The theme of the 2004 meeting was *Invasive Species: The Search for Solutions*.

<http://www.aibs.org/virtual-library/> .

Investigating the Climate System

Investigating the Climate System offers problem-based modules for studying clouds, energy, precipitation, weather, and wind. Learning activities, assessment rubrics, and prerequisite knowledge are included in these down-loadable booklets, correlated to national academic standards for Grades 5-12.

<http://spacelink.nasa.gov/products/Investigating.the.Climate.System/> .

IUCN Caribbean Fishes Weblift

The Caribbean Fishes Specialist Group is composed of ichthyologists and fishery scientists who are engaged in research and conservation of fishes in the Caribbean region. They have created a weblift that provides links to on-line databases around the world that contain information about Caribbean fishes.

<http://caribbeanfish.org/english.html>

JASON Expedition: Disappearing Wetlands

This year's mission for the JASON expedition to the bayous of Louisiana is to better understand what wetlands are, why they are disappearing, and how to best manage these ecosystems in Louisiana, in your neighborhood, and around the world. As students model the work of real researchers, they will gain proficiency in a range of core disciplines, including: math, technology, geography, history, language arts, and life, physical, earth and space sciences.

www.jason.org .

Journey of the Loggerhead:

This interactive DVD on marine turtles, from Environmental Media, was designed and filmed in the company of countless staff and volunteers of local nesting beach monitoring programs, domestic and international agencies, colleges and universities, aquaria, nature centers, and rehabilitation programs. The DVD contains GIS data, satellite tracking information, still photographs, extensive interviews, a curriculum correlations guide and a 26-minute video about the loggerhead and other marine turtle species.

<http://www.envmedia.com/production/loggerhead/index.htm> .

Journey North

Journey North is a free online program engaging students in a study of wildlife migration and seasonal change. K-12 students share their own field observations with classrooms across the hemisphere tracking migration patterns of birds and mammals, the budding of plants, changing sunlight, and other natural events and are linked with scientists who provide their expertise directly to the classroom. Find standards-based lesson plan, activities, and information.

<http://www.learner.org/jnorth/> .

Journey North Begins

Journey North offers a free 10-week geography project, a Mystery Class, starting January 31, 2005. Teachers and students in grade 4-12 classrooms are invited to participate, in which students try to find ten secret classes "hiding" around the globe. Young geographers must use reasoning, graphing, and research skills to pinpoint exact locations of the mystery classes.

<http://www.learner.org/jnorth/tm/mclass/About.html>

Journey South Begins

Track migration across the Northern Hemisphere. Investigate seasonal change, geography, and much more. Students share their own field observations with classmates across North America and analyze data from other classroom and professional scientists. Each study features standards-based lessons and challenges, weekly migration updates, interactive maps, connections with field scientists, and more. They also provide guidance to conduct local observations and fit them into a global context. <http://www.learner.org/jnorth/fall2004/index.html> .

Juan de Fuca Ridge Expedition

REVEL expedition, June 14-July 13, 2004, explored the deep ocean off the Pacific Northwest coast on the research vessel Atlantis. During this expedition to the Juan de Fuca Ridge, 200 miles west of Washington and British Columbia, scientists, engineers and educators used an Autonomous Underwater Vehicle to study the transfer of heat from hydrothermal vents plumes into the ocean. www.ocean.washington.edu/outreach/revel .

Kenai Fjords Tours' Marine Science Explorers Program

The Seward-based *Marine Science Explorer Program* turns a whale watching boat into a floating laboratory/classroom where passengers become active observers and explorers, exploring Resurrection Bay. Students use hydrometers, Secchi disks, plankton nets, microscopes, and observation to learn about the Kenai Fjords area. The Prince William Sound Explorer Program explores glaciers, wildlife, weather and navigation. <http://www.kenaifjords.com/76.cfm>

KIDZONE

The National Wildlife Federation presents this all-new website, with ideas for specific age groups from toddler to teen. The pages contain online games, nature-related activities, and lots of other information and projects. The focus is terrestrial, but there are plenty of interesting ideas. <http://www.nwf.org/kidzone> .

Landscapes of the Heart

Scholars, writers and environmentalists are invited to submit manuscripts for consideration in an expanded edition of the book *Landscapes of the Heart* – one that will cross the boundaries of ecology, economics, law, culture, health, the social sciences and the humanities. http://www.telusplanet.net/public/aleksiuk/homepage/call_for_papers .

Learning Center on Caribbean Weather and Climate

The Learning Center on Caribbean Weather and Climate is designed for a wide range of users, especially from the secondary school level upwards. The general, fundamental phenomena that create weather and climate are explained, including atmospheric composition, solar radiation, the hydrological cycle, and more. Learning projects in the Caribbean are presented alongside tips and resources for teachers. <http://cawedu.net/index.htm> .

Learning Resources at the Royal BC Museum

The website of the Royal BC Museum, British Columbia, hosts a variety of information about topics drawn on the museum's research and public programming. On-line

programs offer information about endangered species, whales, the giant Pacific octopus, and more. Included are activity sheets, lesson plans, and background information.

http://www.royalbcmuseum.bc.ca/programs/index_programs.html

Lehigh Earth Observatory's EnviroSci Inquiry

The LEO EnviroSci Inquiry website is an inquiry-based earth and environmental science website aligned to a variety of education standards. A main goal is to present science to K-12 students in a historical perspective by engaging in a detailed study of the Lehigh River watershed. The focus on this watershed presents learners with an opportunity to observe how industry has impacted the environment over time. Be sure to look through Coastal Explorations under Geology, the Educator's Guide, and the GIS data.

<http://www.leo.lehigh.edu/envirosci/index.html> .

Less Than One Campaign

SeaWeb and the Ocean Wilderness Network, a non-profit coalition of regional and national organizations dedicated to protecting the ocean, have launched *Less Than One*, a public awareness campaign calling for greater protection of the ocean through the establishment of a network of fully protected marine reserves along the U.S. Pacific Coast.

www.lessthanone.org

Lessons Learned About Collaboration

The Eisenhower Mathematics and Science Consortia and Clearinghouse Network is producing a series of Lessons Learned reports from its 12 years of work in mathematics and science reform. The first publication, *What Experience Has Taught Us About Collaboration*, looks at how collaboration is characterized in the literature, presents strategies and steps for building effective collaborative relationships, and explores several "deep structure" issues that represent barriers to collaborative work.

<http://www.mathsciencenetwork.org/collaboration.pdf> .

Life on an Ocean Planet

Current Publishing Corporation offers a high school marine science program for students to discover, explore, and investigate the world of ocean and aquatic sciences. *Life on an Ocean Planet* is correlated to the National Science Teachers Association's SciLinks Internet site. It balances its content with student-tested investigations and hands-on activities to ensure students achieve science understanding. The text uses an interdisciplinary approach to integrate the curriculum.

<http://www.currentpublishingcorp.com/>

Life Story of the Queen Conch

The life story of the Queen Conch, *Strombus gigas*, is available in Spanish, French or English on this website, by CD, or available for downloading in pdf format. (Note: the pdf loads very slowly). The book is a revised and updated edition of *La vie des Lambis* by Katherine Orr and Liliane Frenkiel published in 1986 in Guadeloupe and used in the French Caribbean for educational purposes.

<http://www.mda.cinvestav.mx/biblioteca/strombus/inicio.htm> .

Living Waters: Aquatic Preserves of Florida

A one hour documentary, "*Living Waters: Aquatic Preserves of Florida*", highlights 12 aquatic preserves in Florida. Clyde Butcher, the Department of Environmental Protection through the Florida Coastal Management Program and the Office of Coastal and Aquatic

Managed Areas cooperated with several sponsors to create this educational and artistic documentary to educate, inform and entertain, letting us experience the complexity of the essential components of these water-bound ecosystems.

http://www.liveoakproductiongroup.com/Aquatic%20Preserves/AP_Home.html .

Long-term Monitoring Program and Experiential Training for Students (LiMPETS)

NOAA's National Marine Sanctuary Program introduces the LiMPETS network for middle school, high school, and other volunteer groups to monitor the rocky intertidal, sandy shore, and offshore areas of the five west coast sanctuaries (Olympic Coast, Cordell Bank, Gulf of the Farallones, Monterey Bay and Channel Islands). The collected data allows users to follow long-term changes. All of the information in this website is public and free to be used in any way.

<http://limpets.noaa.gov/> .

Local Fisheries Knowledge Project

Looking through the lens of marine fisheries, high school students learn about history, culture, science, language arts, and business as part of NOAA's pilot Local Fisheries Knowledge Project. This new website highlights a pilot education project in which high school students interview fishermen and others in related industries. The site includes a description of the project, its educational framework, and will be updated as the project progresses.

<http://www.st.nmfs.gov/lfkproject/> .

Looking at the Environment from the WorldWatcher Project

The WorldWatcher project at Northwestern University recruited teacher leaders in environmental science to support *Looking at the Environment*, a new research-based GIS-based environmental science curriculum for high school.

<http://www.worldwatcher.org>

Mapping an Ocean Sanctuary – GIS in the Classroom

Mapping an Ocean Sanctuary introduces the techniques and applications of geographic information systems. Developed by the Center for Image Processing in Education and the Channel Islands National Marine Sanctuary, in collaboration with Sustainable Seas Expeditions, the six lessons teach fundamental marine and environmental concepts. Students work with case studies, data, and images from the Channel Islands, California.

http://www.cinms.nos.noaa.gov/edu/edu_teacher.html

Marine Animals and Human Noise

NOAA Fisheries and scientists from various academic institutions are sponsoring a free national lecture series on marine mammals and human noise, at public aquariums and marine laboratories around the country. The objective of this unique series is to present current scientific information about human sources and uses of sound in marine environments, the physics of sound and hearing, and biological and behavioral factors that relate to noise impacts.

http://www.nmfs.noaa.gov/prot_res/acoustics/lecture.htm .

Marine Aquarium Council Certification and Standards

The Marine Aquarium Council's mission is to conserve coral reefs and other marine ecosystems by creating standards and certification for those engaged in the collection and care of ornamental marine life from reef to aquarium. It offers certification, training, outreach, and more.

<http://www.aquariumcouncil.org/>

Marine Conservation Photo Gallery From Norbert Wu

Underwater photographer Norbert Wu has established a website where photographs taken under his Pew Fellowship are available at a nominal cost as a discretionary service to valid nonprofits and researchers.

www.norbertwu.com/pew/index.html

Marine Mammals Ashore: A Field Guide for Strandings

The National Aquarium in Baltimore announced reduced prices for *Marine Mammals Ashore: A Field Guide for Strandings* by J.R. Geraci and V.J. Lounsbury (1998). The CD-ROM includes the Field Guide (a comprehensive manual for understanding and dealing with a stranded seal, manatee, dolphin, whale, or sea otter), a multimedia overview of the CD-ROM including discussions by marine mammal experts from around the world, photographs, and more.

mmashore@aqua.org

Marine Navigation in the Age of Exploration

The Seattle Art Museum hosted the exhibition, *Spain in the Age of Exploration, 1492-1819*. To accompany it, they developed an interactive website illustrating the use of four ancient nautical instruments: the quadrant, astrolabe, octant, and chronometer. Each instrument's section includes pictures, a bit of history, and a description of how it was used.

<http://www.seattleartmuseum.org/exhibit/interactives/spain/launchWin.htm>

Marine Virtual Explorer: Hydrothermal Vents on the East Pacific Rise

The *Marine Virtual Explorer* is a simulation of a research dive in the Alvin submersible to a hydrothermal vent field on the East Pacific Rise, part of the global mid-ocean ridge system. Mid-ocean ridges are volcanic and, of course, underwater. When you put all the heat and all the water together, you get spectacular hydrothermal activity.

<http://pangea.stanford.edu/marve/>

Math and Science Song Information, Viewable Everywhere

Math And Science Song Information, Viewable Everywhere (MASSIVE), is a database containing information on more than 1700 science and math songs. The songs, suitable for a variety of ages and of varying sound quality, are both silly and serious. Visitors can search on a song or listen to MASSIVE radio, "an Internet radio station devoted entirely to science/math songs."

<http://www.science-groove.org/MASSIVE/> .

Mathematics across the Curriculum

Mathematics across the Curriculum features an "electronic bookshelf" of materials for teaching math through art, history, literature, & music, as well as science, engineering, and other disciplines traditionally associated with math. Topics include misleading averages, bar codes, data analysis, expert systems, information theory, and much more.

<http://www.math.dartmouth.edu/~matc/eBookshelf/index.html>

Meaningful Bay Outdoor Experience

NOAA's Chesapeake Bay Office is committed to connecting individuals and groups to the Bay through their shared sense of responsibility and action. The office administers the *Bay Watershed Education and Training Program*, B-WET, to provide a meaningful

outdoor experience for school students in the watershed, and to provide teacher training supporting meaningful outdoor experiences for students.

<http://noaa.chesapeakebay.net/education.htm>

Meeting Standards Naturally

A free CD-ROM, *Meeting Standards Naturally*, developed for K-12 educators, was developed by the Environmental Education and Training Partnership (EETAP) which is funded by the U.S. EPA's Office of Environmental Education. The CD explores how teaching about the environment can be used to achieve national education standards for core disciplines, discusses what environmental literacy means, and how it helps prepare students to effectively make environmental decisions that impact their daily lives.

http://www.eetap.org/html/new_products.php#CDROM .

Methods for Ecological Monitoring of Coral Reefs

Methods for Ecological Monitoring of Coral Reefs, published by the Australian Institute of Marine Science, provides a comprehensive guide to methods for monitoring all aspects of coral reef ecology. The report also offers advice on establishing a monitoring program

<http://www.aims.gov.au/pages/facilities/bookshop/monitoring-methods/monitoring-methods.html> .

The Microbe Zoo

This virtual zoo, part of the Digital Learning Center for Microbial Ecology at Michigan State University, is filled with exotic specimens from the microscopic worlds around, inside of, and on us. The zoo includes pictures of microbes; data about their size, scientific classification, feeding habitats, and more; and descriptions of how the microbes fit into and interact with their environment and other microorganisms. Zoo specimens are arranged in habitat pavilions, including Water World.

<http://commtechlab.msu.edu/sites/dlc-me/index.html> .

Millennium Coral Reefs Landsat Archive

NASA announces the availability of 1,490 Landsat 7 images of coral reefs in an Internet-based library for the Millennium Coral Reef Project. The collection was created in a partnership which includes NASA, international agencies, universities, and other organizations to provide natural resource managers a comprehensive world data resource on coral reefs and adjacent land areas. This archive contains standardized data that is tiled, zoomable, and downloadable via FTP.

<http://seawifs.gsfc.nasa.gov/cgi/landsat.pl>

Minerals Management Service Marine Education Materials

The Minerals Management Service manages more than a billion offshore acres and collects billions of dollars in mineral revenues annually. *MMS Ocean Science*, the agency's bimonthly magazine, reports on research, including biological resources (fish, turtles, birds, whales), habitat resources (water quality, sediment quality), and socioeconomic resources (communities, archaeology, fiscal impacts). The Alaska, Pacific, and Gulf of Mexico regions provide lesson plans, posters, and teacher guides.

<http://www.mms.gov/mmskids/> , <http://www.mms.gov/alaska/kids/> , www.gomr.mms.gov, <http://www.mms.gov/omm/pacific/kids/educate.htm>, and <http://www.gomr.mms.gov/homepg/lagniapp/lagniapp.html> .

Mixing It Up

Mixing It Up is a compilation of 25 articles from the National Science Teachers Association's elementary school member journal, *Science & Children*. The collection of teacher-tested methods blends science with math, language and the arts. Each article is categorized by grade Science Education Standards. They include lesson plans and idea starters using interdisciplinary, integrated, and thematic approaches.

<http://store.nsta.org/searchBasic.asp?searchTerm=Mixing+It+Up>

Museum of Comparative Zoology: Entomology Primary Type Specimen Database

The Museum of Comparative Zoology at Harvard University has an incredible collection of insects on their website. This online database contains records for primary types in the entomology collections of the Museum of Comparative Zoology (MCZ). In addition to type label data, type stage and status, the database includes high-resolution images of the type specimens. Check out the other department databases (e.g. ichthyology), too.

<http://mcz-28168.oeb.harvard.edu/mcztypedb.htm>

NASA Oceanography Website

See what NASA does in the field of oceanography. NASA Oceanography conducts a program of satellite missions and research projects with its partners to enable global ocean science. This website has links to NASA missions, projects, partnerships and educational materials. For more information, check out

<http://oceans.nasa.gov/Home.htm>

NASA SCI Files™ and The Case of the Ocean Odyssey

The NASA Science Files™ is an award-winning series of instructional programs for grades 3-5, integrating mathematics, science, and technology through the use of Problem-Based Learning (PBL), scientific inquiry, and the scientific method. The series seeks to motivate students to become critical thinkers and active problems solvers. Each episode in the series includes a 60-minute instructional broadcast, an educator's guide, a unique interactive online PBL activity, plus instructional resources.

<http://scifiles.larc.nasa.gov>

National Atlas of the United States

The online National Atlas of the United States is designed to make it easy to find, get, and use geographic information about our nation. Natural phenomena and human activities, such as water quality, tropical cyclone data, toxics release inventory, and ecoregions, are just some of the data layers that you can select from. The maps can be displayed on-line or printed. An additional section hosts subject matter articles.

<http://www.nationalatlas.gov/>

National Coastweek

National Coastweek is coordinated by the Coastal States Organization in conjunction with NOAA, state Coastweek and Coast Day observances, and in partnership with a variety of federal government agencies and national coastal and ocean organizations. Events are held around the country to celebrate the vibrancy of our coastal communities and beauty of our coastal resources. Start the celebration with the Ocean Conservancy's International Coastal Cleanup, and bring it to a close with National Estuary Day.

<http://www.living-edge.org>

National Ecological Observatory Network

The National Ecological Observatory Network (NEON) project is a continental-scale research instrument consisting of geographically distributed infrastructure, networked via state-of-the-art communications. NEON will provide nationally networked research, communication, and informatics infrastructure for collaborative and interdisciplinary measurements and experiments on ecological systems. NEON will provide learning environments for students and foster integration of research and education.

<http://www.nsf.gov/bio/neon/start.htm> ,

National Energy Education Development Project

NEED (National Energy Education Development) develops curriculum and conducts teacher training for K-12 teachers and students. The program is focused on the production, uses and science of energy in all its forms. The NEED program and website includes curriculum materials, professional development, evaluation tools, and an awards program. Note that you may be more successful opening some of the pdf files from the website if your Adobe Acrobat Reader® is already open.

www.need.org .

National Environmental Education Week

National Environmental Education Week, April 10 - 16, 2005, is a full week of educational preparation for Earth Day and will involve some 400,000 educators and 15 million students. Educators can participate by conducting environmental education programming during the week. Check out the "To-Do List" and "Tools and Links" sections on the site for suggested activities, ideas, and resources to involve, educate, and inspire.

<http://www.eeweek.org>

National Geographic Crittercam

The Crittercam is a research tool using a video camera temporarily attached to animals (including marine mammals) to study their behavior. The National Geographic Channel hosts a TV series highlighting Crittercam footage and research. Samples of the videos are available on the website, along with excerpts from the shows.

<http://www.nationalgeographic.com/channel/crittercam/> .

National Geographic Xpeditions

The National Geographic Xpeditions website hosts the lesson plan, *Taking Care of Our Oceans*. In this lesson, students consider why so many people live near the coast and learn about the impacts of this trend on ocean animals. They will make posters to educate coastal residents and visitors about human impacts on marine life.

<http://www.nationalgeographic.com/xpeditions/lessons/14/gk2/seascare.html>

National Marine Sanctuary Calendars

The National Marine Sanctuary Foundation has produced six dynamic calendar products filled with brilliant, colorful photos taken in our national marine sanctuaries. Choices include three wall calendars, a phone/address book, a desk blotter, and a monthly pocket planner. Half of all proceeds from sales will benefit the Foundation's nationwide education and outreach efforts.

<http://nmsfocean.org>

National Marine Sanctuaries Education Website

NOAA's National Marine Sanctuary Program has launched a new education website to enhance public awareness, understanding and appreciation of the marine environment. Take a Sanctuary Tour of image galleries or explore the section for teachers, which includes curriculum, online activities, professional development opportunities, high tech learning, multicultural programs and much more. You can also take a virtual dive in a submersible, download puzzles, read online story books and engage in digital labs. <http://sanctuaries.noaa.gov/education> .

National Ocean Sciences Bowl

The National Ocean Sciences Bowl (NOSB) prepares the next generation of marine scientists, policy makers, teachers, explorers, researchers, technicians, environmental advocates, and informed citizens. The NOSB provides an educational forum for students to excel in math and science and receive national recognition for their diligence and talents. The competition generates student and teacher interest and excitement about science and the oceans, fosters collegiality, teamwork, and factual recollection. <http://www.nosb.org/>

National Ocean Service Discovery Centers

NOAA's National Ocean Service has launched the NOS Education Discovery Center, presenting educational materials about the breadth of scientific research, technology, and activities conducted by NOS in the areas of oceans, coasts, and charting and navigation. The Discovery Center offers Discovery Classroom, Stories, and Kits incorporating numerous multimedia features. Current topics include coral reef conservation, international collaboration, marine protected areas, and more. <http://www.nos.noaa.gov/education/welcome.html>

National Parks of New York Harbor

Aiming to make National Park Service rangers as recognized in New York City as they are on the trails of Yosemite, the National Parks of New York Harbor Project, a new public-private partnership of the National Park Service and the National Park Foundation, unveiled the first phase of an effort to heighten public support and increase access to 22 national park sites around the region of New York Harbor. Its centerpiece is an audio tour, the *Gateway to America: National Parks of New York Harbor Tour*. <http://data2.itc.nps.gov/digest/printheadline.cfm?type=ParkNewsEvents&id=14951>

National Science Teachers Association's (NSTA) Resources and Resource Lists

The National Science Teachers Association periodically publishes lists of different web resources. Recent lists include

- Free Opportunities for High School Science Teachers, http://science.nsta.org/enewsletter/2004-06/high_school.htm
- Free Resources For Science Teachers, at http://science.nsta.org/enewsletter/2004-06/news_stories_high.htm
- Summer reading list for books, <http://science.nsta.org/enewsletter/2004-07/highcatalog.pdf>

Check the NSTA website for links to other websites, resources, and educational materials.

<http://www.nsta.org/>

National Sea Grant Library

The National Sea Grant Library covers a wide variety of subjects, including oceanography, marine education, aquaculture, fisheries, limnology, coastal zone management, marine recreation and law. This unique library houses the only complete collection of Sea Grant funded work including 30,000 titles, 90,000 documents and a 36,000 record bibliographic database that is searchable from the website. You may obtain citations and abstracts of Sea Grant publications, and in many cases access a full text copy of the document online. <http://nsgl.gso.uri.edu/index.html> .

National Student Summit on Ocean Issues

Coastal America is partnering to host a National Student Summit on Ocean Issues, January 14-16, 2004, Washington, DC. Students, teachers, and marine educators from 14 Coastal Ecosystem Learning Centers will present their research on regional ocean issues to a panel of experts, and present their findings as a national issue paper, along with a "Proclamation of Student Commitment to Action on Ocean Issues." Contact gene.cope@noaa.gov for more information

National Wildlife Refuge Week

Americans will flock to national wildlife refuges for National Wildlife Refuge Week. The National Wildlife Refuge System is pivotal role in offering outdoor recreational opportunities as well as showcasing the conservation and recovery of wildlife species on refuges across the country. Bald eagles, whooping cranes and the California condor are some of the endangered and threatened species that have been helped back from the brink of extinction by the work of biologists in national wildlife refuges. <http://refuges.fws.gov/> .

Natural Hazards - Earth Science Week

This year, Earth Science Week, October 10-16, 2004 focuses on Natural Hazards and the ways that Earth Scientists study hazards in order to understand their causes and minimize their impact on society. The website has a variety of educational activities grouped by suggested grade level. <http://www.earthsciweek.org/> .

Natural Inquirer Journal from USDA

This journal, *The Natural Inquirer*, was created so that scientists can share their research with middle school students. Each article describes scientific research conducted by scientists in the USDA Forest Service. The website lets you search for articles by topic and by issue. While it focuses, naturally, on forests, topics of interest for marine educators include wildlife, habitat, and water. www.naturalinquirer.usda.gov .

Navigating Change

The goal of Navigating Change is to motivate, encourage and challenge people to take action to improve the environmental conditions in their own backyards, especially as it pertains to our coral reef ecosystems. Navigating Change promotes responsibility for the stewardship and sustainability of our islands and our ocean. Classroom videos, teacher curriculum and more are available. <http://www.hawaiianatolls.org/research/NavChange2002/index.php> .

NeMO – New Millennium Observatory

This New Millennium Observatory website allows students to explore a seafloor observatory geographically or by topic. Learn about seafloor animals, hydrothermal vents, mid-ocean ridges, axial volcano, lava flow, technology, and tools. Operate (remotely) a vehicle that takes you to the seafloor near an active submarine volcano. Explore black smoker vents, new lava flows, and unusual life forms. The website includes background information, curriculum, and interactive virtual explorations.

<http://www.pmel.noaa.gov/vents/nemo/index.html>

New Zealand's National Institute of Water & Atmospheric Research

New Zealand's leading provider of atmospheric and aquatic science is committed to education in New Zealand at all levels. *Water & Atmosphere* is their flagship education publication; *Aquaculture Update* and *Biodiversity Update* are industry-focused with a strong educational message. The publications are also available online. The website includes a section on activities and classroom resources, common weather and hydrological terms, and stuff for students.

<http://www.niwa.co.nz/>

NOAA Coral Reef Conservation Program Launches External Newsletter

NOAA Coral Reef News is a new monthly e-newsletter established to provide current information on the activities of NOAA's Coral Reef Conservation Program and other relevant NOAA programs. The NOAA Coral Reef Conservation Program supports effective management and sound science to preserve, sustain and restore valuable coral reef ecosystems.

<http://www.coralreef.noaa.gov> .

NOAA Fisheries Bycatch Website Updated

The bycatch section of the NOAA Fisheries website has received a major update to include recent activity, including sea turtle bycatch reduction research; amending the fishery management plan for Atlantic tunas, swordfish, and sharks; management to reduce seabird incidental take; and amending the fishery management plan for the shrimp fishery of the Gulf of Mexico.

<http://www.nmfs.noaa.gov/bycatch.htm> .

NOAA's National Marine Sanctuary Education Listserv

The new National Marine Sanctuary Education Listserv is a closed list server that allows for efficient communication between America's teachers and National Marine Sanctuary Program Education Coordinators. Please use this list server for disseminating pertinent information about NOAA and National Marine Sanctuary education opportunities and other related information to the entire group.

Claire Johnson, at claire.johnson@noaa.gov.

NOAA Ocean Explorer Educator E-mail Update List

NOAA Ocean Exploration has developed a new listserv for educators. The listserv will include professional development, virtual courses and other online offerings, notifications of upcoming NOAA Ocean Exploration Expeditions and launches of associated web site materials and lesson plans, and information about ocean career webcasts and web forums.

http://oceanexplorer.noaa.gov/backmatter/email_update.html .

NOAA Science Camp

A weeklong pilot program summer session designed to expose school age children to NOAA's activities in the monitoring and protection of the environment was piloted in the Seattle area at Sand Point.

Sarah.Morison@noaa.gov

Nonformal EE Programs – Guidelines For Excellence

The *Nonformal Environmental Education Programs – Guidelines for Excellence* comprises a set of recommendations for developing and administering high quality nonformal environmental education programs. The guidelines describe six key characteristics that can help guide the program development process: Needs Assessment, Organizational Needs and Capacities, Program Scope and Structure, Program Delivery Resources, Program Quality and Appropriateness, and Evaluation. <http://naaee.org/publications/pubdescriptions.php/> .

Non-Point Source Pollution Model from Environment Canada's Georgia Basin Ecosystem Initiative

The *Non-Point Source Pollution Model* is an interactive environmental education tool for understanding pollution, where it comes from, and what we, as individuals, can do about it. Instructions for making the model are available on the website, along with resources and curriculum connections.

<http://www.pyr.ec.gc.ca/EN/IPM/index.shtml>

NowCOAST: Web Mapping Portal to Real-time Coastal Observations and NOAA Forecasts

NOAA's Coast Survey Development Laboratory has released an updated version of its Internet mapping portal, nowCOAST. The website allows one-stop access to real-time coastal observations and NOAA forecasts for any coastal region in the U.S. The new version features several enhancements including a new map viewer, a separate data browser window, an accompanying informational web page, and new links to additional observations and NOAA forecasts.

<http://nowcoast.noaa.gov>

NSTA Teacher's Grab Bag

The National Science Teachers Association's Teachers' Grab Bag is on the web. You can find hundreds of free and almost free items such as videos, publications, CD-ROMs, lab kits, and much more. The database is searchable by cost and type of product. Keep it in mind if you have items you'd like to distribute, as the current database comes up empty from a search on "marine."

<http://www.nsta.org/resourcesgrabbag>

OBIS-SEAMAP Digital Archive

The Ocean Biogeographic Information System – Spatial Ecological Analysis of Megavertebrate Populations (OBIS-SEAMAP) project is part of the Census of Marine Life initiative. It is a publicly-available, web-based digital archive of marine mammal, seabird and turtle data, along with oceanographic and environmental data. Useful tools include on-line mapping capabilities, species profiles, and down-loadable data.

<http://obis.env.duke.edu>

OceanAGE Web Chats with Marine Explorers

Ocean Careers to Inspire Another Generation of Explorers (OceanAGE) invites students to interact with women and men who explore our ocean planet to better our world. Explorers provide students with first-hand knowledge of careers through live interviews, profiles, and mission logs. Video profiles, biographies, and background materials related to their work are available, and the website features interactive video Web Casts.

<http://oceanexplorer.noaa.gov/edu/oceanage/>

Ocean Alaska Science and Learning Center

The Ocean Alaska Science and Learning Center, a partnership dedicated to understanding and preserving the marine ecosystem connecting Alaska's National Parks through research and education, announces the launch of its new web site. The site has information, images, video clips, and audio clips related to marine research in Alaska's National Parks. Also, review the Request for Proposals.

<http://www.oceanalaska.org> .

Ocean Connections from COSEE-Florida

The Florida Center for Ocean Science Education Excellence publishes their quarterly newsletter, *Ocean Connections*, on their home page. The newsletter features information about professional development and other events, and highlights a web portal and education program each month. In addition, if you register on the website, you will be able to post your materials, lesson plans, images, articles and data sets for others to share. <http://floridacosee.net/> .

Ocean Discovery Kits

NOAA's National Ocean Service has launched three discovery kits explaining the science behind NOS activities, designed to make complex subjects accessible to teachers and students at the high school level. Each kit includes an on-line tutorial, a roadmap to resources, and a set of lesson plans correlated to National Science Education Standards. Discovery Kits have been developed for Corals, Tides & Water Levels, and Geodesy.

<http://oceanservice.noaa.gov/education/welcome.html> .

Ocean Exploration: H.M.S. Challenger and Beyond

Join the College of Exploration's Challenger Team under the sponsorship of NOAA's Office of Ocean Exploration for this upcoming virtual workshop, April 19-May 7, 2004. Dialogues with colleagues and experts will explore topics from the mid-19th century history of ocean exploration, current expeditions, and a glimpse into the future of ocean exploration.

<http://www.coexploration.org/oe2004> .

Ocean Literacy

This web site and online survey are the result of a partnership of agencies and institutions concerned with improving ocean literacy. Check out the extensive links under Education Resources, Links, and National & Regional Programs.

<http://oceanliteracy.org/> .

Ocean Literacy Educational Materials Available

The National Geographic Office in Santa Barbara has had quantities of the following materials available:

- Ocean Atlas Teacher's Guides
- Oceans for Life Brochures

Contact Sally Ziegler at Sally.Ziegler@noaa.gov for inquiries.

The Ocean Project Community Conservation Action Map

The Ocean Project website has a searchable map of their partner organizations that utilize the help of volunteers and members. Website visitors can click on their state or Canadian province and find a list of organizations and volunteer opportunities related to aquatic or ocean conservation in their community.

http://www.theoceanproject.org/action_map/

Oceans of Life—An Educator's Guide to Exploring Marine Biodiversity

World Wildlife Fund presents their new educator's guide, *Oceans of Life*. The marine biodiversity module, designed for middle-school educators and students, has background information, activities, and case studies. Appendices offer a framework, mini case studies, marine legislation, planning charts, a glossary, a bibliography, and more. Order the guide through Acorn Naturalists.

www.acornnaturalists.com

Oceanography Section of National Academies Website

The Earth and Life Studies Division of the National Academies focuses on the intersection of science and policy. The website features news, reports, projects, and upcoming events. The Ocean Studies topic area section posts recent reports and projects in ocean research and policy. There is also an electronic newsletter.

<http://watson.nap.edu:8080/gateway-dels/dels/subjectNews.jsp?subject=69> .

Oceanworld

Oceanworld is a web site for middle-school, high-school, undergraduate, and graduate students and teachers interested in the ocean. It has tutorials for middle-school and high-school students, materials for middle-school teachers, an on-line textbook in physical oceanography, all course material for five college courses, and on-line resources which include links to hundreds of site with on-line data. The tutorials cover fisheries, weather, Forums, coral reefs, currents and more.

<http://oceanworld.tamu.edu/>

Of Sand and Sea: Teachings From the Southeastern Shoreline

Of Sand and Sea: Teachings From the Southeastern Shoreline, by Paula Keener-Chavis and Leslie Reynolds Sautter, is an introductory text which covers the ocean's geology, biology and chemistry. It is written at a reading level for middle and high school students. While you're on the website ordering a copy, check out the other offerings available at nominal or no charge.

http://www.scseagrant.org/library/library_pubs_marine.htm

O'Neill Sea Odyssey in Monterey Bay National Marine Sanctuary

The *Sea Odyssey* program is a 3-hour learning experience that takes place aboard the 65-foot Team O'Neill catamaran with follow-up lessons at the shore-side Education Center. The students rotate through three stations: marine biology, ecology, and navigation. There is a curriculum guide, *Investigations in a National Marine Sanctuary*, which accompanies the different stations.

<http://www.oneillseaodyssey.org/>

Operation DeepScope Expedition

NOAA Ocean Exploration launched the Operation DeepScope Expedition, August 3-14, 2004. This expedition used advanced technologies, such as the sophisticated Eye-in-the-Sea underwater camera system. The Harbor Branch Oceanographic Institution's research vessel Seward Johnson and its manned submersible, the Johnson-Sea- Link, took scientists to the northern Gulf of Mexico, with basins, canyons, escarpments and methane seeps. The website includes lesson plans, logs, videos and more.

<http://oceanexplorer.noaa.gov/explorations/04deepscope/welcome.html>

Outstanding Science Trade Books for Students K-12

The National Science Teachers Association, in conjunction with the Children's Book Council, releases an annual list of outstanding science books for Students. The 2004 list is out and includes books on marine-related topics. Each entry includes a brief description of the book, the name of the publisher and current price, and recommended reading levels.

<http://www.nsta.org/ostbc> .

Ozone Forecasts

Experimental air quality forecasts have begun. NOAA's National Weather Service will produce hourly forecasts updated twice daily for the northern U.S. from Maine to the Carolinas and west to Indiana, Kentucky and Tennessee. The air quality forecast was developed by NOAA Research and the weather service, in partnership with the EPA. EPA's site will also include interpretive health-based air quality index maps based on the forecast guidance.

<http://www.epa.gov/airnow/>

Paddle Bayou Lafource, Louisiana

Back to the Bayou 2003, November 7-10, 2003, from the Barataria-Terrebonne National Estuary Program, featured a 4-day canoe and kayak trip, daytime and evening festivities, plus the opportunity to appreciate bayou communities and life along the bayou from Donaldsonville to the Gulf of Mexico.

<http://paddling.btne.org/>

Participatory Management Clearinghouse for Wetlands

The Participatory Management Clearinghouse has been set up to facilitate the sharing of information concerning participatory management of natural resources and disseminate field experiences. Classified thematically by ecosystems, regions, or themes, the posted documents, specific projects and case studies cover issues such as biodiversity and traditional knowledge, gender, water, equitable sharing, protected areas, and indigenous peoples. The website includes dynamic maps and a search system.

<http://www.PMCnet.org> .

PAST Foundation

The mission of the nonprofit educational PAST Foundation is to promote a better understanding of history and culture by teaming professional anthropologists and historians with the public to explore potential cultural sites both locally and globally. Professional anthropologists and archaeologists are teamed with K-12 students to explore potential cultural sites in their area. Planning is currently underway for the PAST Foundation's 2005 Field School.

<http://www.pastfoundation.org/>

The PBS Borders Environmental Project

Each POV Borders episode asks visitors to consider an aspect of their everyday lives in ways that challenge their preconceptions, and expand our own "borders" of understanding. Lesson plans for K-12 teachers are designed to facilitate online storytelling and sharing. Each of the three downloadable lesson plans focuses on Earth, Water, or Air. Also check out the link to the Watershed Game

(<http://www.bellmuseum.org/cgi-bin/start.pl?user=bellmuse&prog=start.pl&name=&submit=Let%27s%2Bgo!>)
<http://www.pbs.org/pov/borders/2004/educators/index.html> .

Pennies for the Planet

World Wildlife Fund sponsors the *Pennies for the Planet* campaign. Kids learn about three priority regions around the world, helping get them excited about conservation and connecting environmental education with environmental action. The 2003 program includes the Everglades and South Florida. The website includes links to free posters, education activities, and additional educator's materials.

<http://www.worldwildlife.org/windows/pennies/>

Pew Fellowship Nominators

The Pew Fellows Program in Marine Education solicited nominators for Pew Fellowships. Their goal was to recruit a diverse group of nominators who have knowledge of outstanding individuals doing innovative work in marine conservation around the world.

dmeck@neaq.org

Phytopia: Discovery of the Marine Ecosystem

This educational CD-ROM, developed by Bigelow Laboratory for Ocean Sciences, University of New England, and NASA's Jet Propulsion Laboratory, is available for the price of shipping. The CD provides a window to the world of the oceans' microscopic life. Phytopia consists of three major modules: "Phyto Files," "Phyto Factors," and "Special Topics." Other features include an image-based glossary and summaries of relevant topics.

<http://www.bigelow.org/phytopia/>.

Plastic in the Ocean

Marine debris has recently been highlighted in newspapers and was featured on Canada's Discovery Channel. TV documentary maker Ian Connacher describes a flood of junk flowing into the sea – some to circulate endlessly in currents, some to be eaten by fish, and then by humans. He produced a feature piece on ocean plastic sampling, highlighting the implications of land-based sources of pollution on the marine environment.

<http://www.exn.ca/dailyplanet/view.asp?date=1/15/2004> .

Pito Deep Expedition

Teachers and students can explore the geological, geophysical and geochemical study of the upper ocean crust exposed at Pito Deep, west of Easter Island. From January 30 - March 8, 2005, scientists will be documenting the scientific expedition through "Dispatches from Sea" located on the Pit Deep Expedition website.

<http://www.nicholas.duke.edu/pitodeep/index.html>

Point2Nature Environmental Education Software Developers

Point2Nature by CD Meyer, Inc. is a multimedia company that specializes in environmental education software for zoos, aquariums, nature centers, and museums. They use graphics, dynamic animations, music, sound effects, panoramic photography, and video to engage students.

www.point2nature.com

The Polyquarium

The Macrogalleria is a website from the Department of Polymer Science at the University of Southern Mississippi. The project provides working knowledge of polymers and related concepts to students of all levels, at multiple levels. The program is informative and entertaining to both beginners and more advanced students of polymer science. The Polyquarium mimics aquarium displays.

<http://www.psrc.usm.edu/macrog/sea/index.htm>

Postcards from the Eddy

ECOHAB Pacific Northwest is a 5-year multi-disciplinary project to study the physiology, toxicology, ecology and oceanography of toxic *Pseudo-nitzschia* species off the Pacific Northwest coast in the Juan de Fuca eddy. The resident Teacher At Sea, Herb Bergamini, posts "postcards" of his experiences on the R/V Atlantis during the 21-day research cruise including photos, daily logs, and interviews with the crew. He also responds to students' questions about oceanography and life at sea.

<http://herb.northwestschool.org> .

The Power of Place: Geography for the 21st Century

The Annenberg Channel presents *The Power of Place: Geography for the 21st Century*, to teach the geographic skills and concepts that are necessary to understand the world. Geography educators and content experts from around the globe shed light on the physical, human, political, historical, economic, and cultural factors that affect people and natural environments. Maps, animation, and academic commentary bring into focus case studies from 50 sites in 36 countries.

<http://www.learner.org/resources/series180.html>

PRBO Marine Division

The mission of PRBO's Marine Division is to use science to guide ocean ecosystem protection, conservation, and management. The website features detailed information about our many marine projects. These focus on predators as climate change and habitat quality bio-indicators; population dynamics; life history characteristics seabirds in relation to marine fisheries and pollution; and the creation of marine protected areas and marine reserves to protect ocean ecosystems.

www.PRBO.org/marine

Project AWARE Teachers Guide

The Project AWARE Foundation conserves underwater environments through education, advocacy and action. The Foundation funds projects that have a direct benefit to the aquatic environment such as public education, grassroots conservation projects, volunteer-supported community activism, and more. The website highlights wreck awareness through Respect Our Wrecks, including on-line public service announcements, a downloadable Aware Kids teacher's guide, grants, and more.

<http://www.projectaware.org/>

Project Dolphin Campaign

NOAA Fisheries Office of Protected Resources has developed educational materials about the dangers of feeding and otherwise closely interacting with wild dolphins, including brochures, posters, warning signs, and public service announcements.

jill.lewandowski@noaa.gov

Project Oceanica

Project Oceanica continues to add new features to their website, including Fish Watch and Shelf Edge Reefs. Check out the Transects Program, designed to immerse undergraduate and graduate students in oceanographic research by taking them to sea to collect biological and geological samples and later analyze the data in the laboratory. Transects is funded for two years, and a total of four 5-day research cruises and follow-up oceanographic research courses will be offered over the 2 year project.

<http://oceanica.cofc.edu/home.htm> .

Project Shark Awareness

The Florida Museum of Natural History presents Project Shark Awareness, shark education and outreach programming for educators. This outreach program is created to educate the public about the myths and realities of shark biology, behavior, and conservation. The targeted audience consists primarily of students at middle schools, high schools, youth organizations, and environmental centers. The project has also received funding to hold professional development workshops.

<http://www.flmnh.ufl.edu/fish/education/psa/psa.htm> .

Project WILD Science and Civics: Sustaining Wildlife Curriculum

Project WILD's high school curriculum is designed to serve as a guide for involving students in environmental action projects aimed at benefiting the local wildlife found in a community. It involves young people in decisions affecting people, wildlife, and their shared habitat in the community. The program consists of four major components: awareness, participatory democracy, habitat exploration and taking action.

http://www.projectwild.org/materials/science_and_civics/science_and_civics.htm

Rachel Carson Estuary Live

The Rachel Carson Component of the North Carolina National Estuarine Research Reserve site held their Estuary Live on September 21-22, 2004. The sessions were aligned with the North Carolina Science Standards will covered general estuary information, cephalopods, fouling communities, sustainable seafood, boating, and reptiles.

www.estuarylive.org .

Ramsar Site Database

The Ramsar Sites Database is now online. Wetlands International manages and develops the database. A search facility now makes it possible to find one or more Ramsar sites by selecting on nearly any combination of criteria, including wetland type or land use, designation date, and others.

<http://www.wetlands.org/RSDB/default.htm> .

Ramsar 'Toolkit', second edition (2004)

The 14-volume Ramsar Convention Handbooks for the Conservation and Wise Use of Wetlands, 2nd edition, is available for downloading. The Convention promotes an integrated package of actions to ensure the conservation and wise use of wetlands. The

handbooks incorporate the guidelines, relevant material from other sources, and case studies designed to illustrate key aspects of the guidelines. Most of the full case studies can be found on the website of the Convention (http://ramsar.org/wurc_index.htm).
http://ramsar.org/lib_handbooks_e.htm .

Ramsar Video

The 22-minute Ramsar video, available in English, French, and Spanish, offers an introduction to the problems facing wetlands everywhere and focuses upon international case studies. For easier downloading, "Save Target As" (Microsoft Internet Explorer) or "Save Link Target As" (Netscape) and save the whole film to your hard disk, then launch.

http://www.ramsar.org/wwd2003_index.htm#offer

Rare: Inspiring Conservation

The RARE Center for Tropical Conservation has pioneered innovative approaches to achieving conservation results through community-based education. Rare supports hundreds of grassroots conservationists around the world each year, providing them with training, technical support, and resources. Its Pride campaign bridges the gap between the scientific realm and the daily lives of local people through social marketing techniques, making conservation messages relevant to the local community.

<http://www.rarecenter.org/> .

Reach the World

Reach the World is a nonprofit educational media developer and a provider of schoolbased training in instructional technologies. Its mission is to link students and teachers in low-income communities with real-world, global expeditions that have the power to expand learning beyond the classroom. Follow the voyage of the Makulu, as the trade winds carry her across the Atlantic Ocean towards Barbados in the Caribbean Sea. Check out the materials in the Floating Classroom.

<http://reachtheworld.org/> .

Reef Environmental Education Foundation

The Reef Environmental Education Foundation (REEF) was founded out of growing concern about the health of the marine environment, and the desire to provide the scuba diving community a way to contribute to the understanding and protection of marine populations. REEF has numerous programs and projects. Two of the main programs are the REEF Fish Survey Project and REEF's Field Station Program that includes the organization's latest initiative, the Non-Profit/Academic Field Station Program.

www.reef.org .

The Regional Ocean Conservation Club

The purpose of the Regional Ocean Conservation Club (ROCC) is to develop a student coalition where students are encouraged to take an interest and become involved in local marine and aquatic issues facing the environment. The mission is to have high school students work with local, state and national organizations to protect and restore the health of marine and aquatic resources through education and conservation programs.

<http://www.igfa.org/ROCC.asp> .

Reefs at Risk in the Caribbean Report

Coral Reefs in the Caribbean span an estimated area of 26 thousand square kilometers, which the authors say dissipates wave and storm energy when hurricanes approach the Caribbean, as well as Florida. The Reefs at Risk in the Caribbean Report, downloadable on this website, reveals that shoreline protection offered by natural Caribbean reefs saves countries between \$700 million and \$2.2 billion annually. This economic information was calculated through a special threat measurement index.

http://marine.wri.org/pubs_description.cfm?PubID=3944 .

Research and Monitoring in the National Estuarine Research Reserve System

Special Issue 45 of the *Journal of Coastal Research* is a volume dedicated to research and monitoring in the National Estuarine Research Reserve System (NERRS). It represents the outgrowth of many years of research and monitoring conducted at 26 NERRS sites around the country. The papers comprising this comprehensive publication consist of a wide array of studies conducted by individuals in academia, state and federal government agencies, and independent research institutions.

Contact Dr. Michael J. Kennish at kennish@imcs.rutgers.edu

Resource Guide For Oceanography and Coastal Processes

The *Oceanography and Coastal Processes Resource Guide* has been developed by the Operation Pathfinder participants. These 81 lesson plans, aligned with National Science Education Standards, support the infusion of concepts and appropriate activities concerning oceanography and coastal process into classrooms across the country. The lesson plans cover coastal processes, organisms and habitats, geology, and chemistry. They range from ROV manipulator arms to camouflage to creatures in the coral.

www.coast-nopp.org/toc.html

www.usm.edu/aquarium

Resource Ranger Club

The Environmental Education Coordination Team was formed to coordinate EE efforts in the Pensacola, Florida area. Team members include agency and industry personnel, teachers, and others. They have developed the curriculum-based Resource Ranger Club, an environmental club in elementary and middle schools. This club includes classroom presentations, follow-up activities, field trips, and a series of award-winning video shows.

godwine@wfrpc.dst.fl.us or 850-595-8910 ext 226.

Respect the Beach

Respect the Beach is a coastal educational program that includes classroom lectures, handouts, video, hands-on projects, and more, designed to teach coastal watershed processes, shoreline ecology and coastal areas stewardship. The program is brought into classrooms by Surfrider members, who represent ocean environmentalism from the surfer's perspective, and who are role models that students can relate to. Programs include Beachology, Watershed Works, and the Snowrider Project.

<http://www.surfrider.org/programs/respectthebeach.asp> .

Ridge 2000 Deep Sea Explorations

Ridge 2000 is a multidisciplinary science research program focused on integrated geological and biological studies of the mid-ocean ridge system. The premise of Ridge 2000 science is that life in deep-sea ecosystems is linked to the flow of energy and material from Earth's deep mantle, through the volcanic and hydrothermal systems of the

oceanic crust, to the deep ocean. The website offers a materials and information; the expeditions page links to current and past research cruises,
<http://www.ridge2000.com/index.html> .

Rip Currents: Break the Grip of the Rip

NOAA's National Weather Service and National Sea Grant Program, in partnership with the United States Lifesaving Association, are working together to raise awareness about the dangers of rip currents. Research is also being conducted in order to develop and improve the ability to predict the occurrence and strength of rip currents. A new website has background information, a downloadable brochure and sign, and links to other information.

<http://www.ripcurrents.noaa.gov/index.shtml> .

Riverquarium to open in Georgia

The Flint Riverquarium will open in Albany, Georgia, to promote conservation through aquatic exhibits and educational experiences that engage diverse audiences by interpreting the unique ecosystems of the Flint River watershed. Exhibits will feature fish and other aquatic animals from the Flint River and downstream, including Apalachicola Bay, Lake Seminole and the Gulf of Mexico. In addition, the Riverquarium hosts a World of Water exhibit featuring river systems from around the world.

www.flintriverquarium.com .

RMS *Titanic* Expedition 2004

Dr. Robert Ballard and scientists from NOAA and other institutions spent 11 days, May 27-June 12, 2004, at the site of the sunken remains of the R.M.S. Titanic, mapping the ship and conducting scientific analyses of its rapid deterioration. The team worked aboard the NOAA research vessel Ronald H. Brown and used ROVs to document the current state of Titanic. Educators and scientists developed a series of lesson plans for students in Grades 5 – 12 that are specifically tied to the Return to Titanic Expedition.

<http://oceanexplorer.noaa.gov/explorations/04titanic/welcome.html> and
www.returntotitanic.com .

RubiStar – Free Generic Rubrics for Teachers

Rubrics can be quite time-consuming to develop. The RubiStar website provides tools to help the teacher who wants to use rubrics but does not have the time to develop them from scratch. RubiStar provides generic rubrics that can simply be printed and used for many typical projects and research assignments, or customize your own from their format.

<http://rubistar.4teachers.org> .

Sanctuary Integrated Monitoring Network

The Monterey Bay National Marine Sanctuary launched the Sanctuary Integrated Monitoring Network (SIMoN). Users can access the website to obtain local water quality monitoring information, generate watershed maps, locate monitoring information, link to data sets from individual stations, and download GIS layers.

<http://mbnms-simon.org> .

Sanctuary Watch: Education Edition

Ocean education and hands-on field activities from around the country are highlighted in the new education edition of the Sanctuary Watch newsletter produced by NOAA's National Marine Sanctuary Program. You can subscribe to Sanctuary Watch

electronically by sending an email to requests@willamette.nos.noaa.gov and putting "subscribe sanctuarywatch" in the subject line.

Sanctuary.Education@noaa.gov .

Sally Ride Science Festivals

Sally Ride Science Festivals bring together hundreds of middle school girls for a festive day of science and socializing, to support girls in grades 5-8 in their interest in science and in possible science-related careers. Dr. Ride provides the keynote speech, and girls can enjoy a hands-on science street fair and attend discovery workshops on a variety of science careers. There are often workshops for parents and teachers.

<http://www.sallyridefestivals.com/> .

Saving Springer

The NOAA documentary, *Saving Springer*, is a story about the work that the NOAA Fisheries Office of Protected Resources, does on a daily basis. It is about a young killer whale and the dedication of NOAA professionals helping return her to her family. It will air on 90 public television stations around the nation over the next several months. The next airings are Mobile, Alabama/Pensacola, Florida, on November 14 and 17, 2004, and Champaign, Illinois on November 14 and 18, 2004.

local Public Broadcast Stations.

SCHOLARS Program from the National Climatic Data Center

The National Climatic Data Center (NCDC) hosted approximately 60 students for the unveiling of their educational CD and educational packets. The NCDC signature program, SCHOLARS (Serving Customers and Helping Others Learn through Applications Involving Remote Sensing), can also be viewed on the website. The students toured the museum, listened to presentations on both geostationary and polar orbiting satellites and experienced the Magic Planet.

www.ncdc.noaa.gov/oa/edu.html

Science Bulletin Website

The Science Bulletin website, sponsored by the American Museum of Natural History, highlights breaking news on astrophysics, earth sciences, and biodiversity. The bulletins present current science news stories through interactive videos (5- to 7-minute video stories that follow scientists into the field), photographs, graphics (using 3-D computer models), and interactive data visualizations (using NASA satellite data). Be sure to look through *Jellies Down Deep*.

<http://sciencebulletins.amnh.org/> .

Science, Education, and Marine Archeology Program in Portugal (SEMAPP)

The Ocean Technology Foundation offers a submersible diving expedition to explore Portimao Canyon off the coast of Portugal from April 12-19, 2004. They will study the biodiversity and geology of the canyon and look for 14th-18th century shipwrecks from the Age of Exploration. The web offerings will include "Ask the Explorers," daily logs, and questions related to the expedition that can be turned into lessons for your students.

<http://www.oceantechnology.org/semapp.htm> .

Science Events At Your Fingertips

The National Science Teachers Association has an online calendar identifying science-related events and activities. This information includes programs, grants, and workshops

in the field of science. Visitors can search by category, grade level, or region, and submit their own upcoming event.

<http://www.nsta.org/main/calendar/events.php>

SciLinks Assignment Tool

SciLinks®, NSTA's Internet referencing system, now features a new Assignment Tool to help teachers create and review student online assignments, and help gauge student progress. SciLinks is accessible using print-linked codes found in many textbooks, NSTA Press books and journals, and independently as a benefit for all NSTA members.

http://science.nsta.org/nstaexpress/nstaexpress_2004_05_10_extra.htm .

Sea Around Us

The Sea Around Us Project provides an integrated analysis of the impacts of fisheries on marine ecosystems, and to devise policies that can mitigate and reverse harmful trends whilst ensuring the social and economic benefits of sustainable fisheries. The website includes Internet GIS maps, background information, and downloadable reports, including *Competition between Marine Mammals and Fisheries: Food for Thought* and *Seamounts: Biodiversity and Fisheries*.

<http://www.seaaroundus.org/project.htm>

<http://www.seaaroundus.org/BooksReportsF.htm>

Sea Ducks of Alaska

The Center for Alaskan Coastal Studies has developed a hands-on activity guide for grades 4-6 on the Sea Ducks of Alaska. The guide offers teacher background information and teaching activities that explore sea duck adaptations, their role in food webs, provides an opportunity to research Alaskan species, and looks at conservation issues.

www.akcoastalstudies.org

Sea Education Association K-12 Lesson Plans

The Sea Education Association offers at-sea experiential programs with shore and sea components to develop students' and teachers' ability to apply scientific thinking and method to the marine environment. Lesson plans are posted for teachers to help bring the ocean into the classroom. Topics include marine biology and ecology, geological and physical oceanography, and nautical science, listed by grade level and topic.

<http://www.sea.edu/k12LessonPlans/k12pgmtop.htm>

Sea to Shining Sea – Partners in Conservation Webcast from Texas and Alaska

The *Sea to Shining Sea – Partners in Conservation* webcast, November 14, 2003, covers global topics and issues from Alaska to Texas. It is divided into three major topical areas: A Sense of Place: Understanding the Habitat; Wildlife: Adaptations and Concerns; and Human Impact and Involvement. Topics, guiding questions, curriculum standards, Internet resources and activity ideas are included online.

<http://www.tpwd.state.tx.us/expltx/eft/seacenter/guide.phtml>

Sea Turtles Resources

Check out these sea turtle web resources

<http://www.sefsc.noaa.gov/seaturtlepublications.jsp> .

http://www.nmfs.noaa.gov/prot_res/PR3/Turtles/symposia.html .

http://www.floridamarine.org/features/view_article.asp?id=2156 .

www.widecast.org .

<http://www.ex.ac.uk/~pcthornt/EuroTurtle/homep.htm> .
www.seaturtles.org .
www.seaturtle.org/mtn .
www.floridaleatherbacks.com .

Sea Turtles: An Ecological Guide

This book features more than 350 color photos and original graphics to illustrate basic concepts of taxonomy, ecology, and physiology, as well as human impacts and conservation. A unique reference for naturalists, divers, eco-tour operators, resource managers and policy-makers, the book is also designed to be used as a text. The authors are currently working on a Teacher's Resource Guide, which will be available at no charge to anyone who orders 10 or more copies of the book for classroom use.

Dr. Karen Eckert at keckert@widecast.org

Seabird Aware Brochure

As animals of the open ocean, seabirds are important allies in the effort to conserve ocean environments. To encourage kayakers, pilots, fisherman, and others to respect the sensitive nature of seabirds, PRBO Conservation Science has developed a brochure that identifies the problem of disturbance to seabirds and simple solutions that can reduce human impact. This brochure and website will help to prevent disturbance to seabirds during the sensitive breeding period.

www.prbo.org/seabirdaware .

Seafood Watch Pocket Guides

The Seafood Watch program has launched a new pocket guide for the Southeast region and updated the West Coast pocket guide. The Southeast guide includes several new species such as tilefish, conch, mackerel, and mullet. Seafood Watch has also added or updated species reports to their website. To learn more about these new recommendations please visit the All-Fish List on their website.

http://www.seafoodwatch.org/cr/cr_seafoodwatch/ .

SEA-GEOFISH

The southeast geographic fishery-independent survey and historical (SEA-GEOFISH) database is a web-based mapping application presenting data from a long-term fishery survey conducted by the South Carolina Department of Natural Resources. The geographic database includes data collected during more than 30 years of research cruises, sampling fishes and fish habitat off the Atlantic coast of the southeastern U.S. The maps include distribution of fish species; data on abundance, diversity and more.

<http://ekman.csc.noaa.gov/seageofish/seageofish.htm>

Seas the Day Initiative

The Ocean Project, together with SeaWeb, launched *Seas the Day* to promote awareness and elevate importance of the ocean, and also to encourage people to take action to make a difference for the health of our ocean planet. The initiative will include development of mission-driven products. The first product is a monthly calendar.

www.TheOceanProject.org .

Seashore Survivors eField Trip

The Alaska SeaLife Center launched *Seashore Survivors*, a virtual tour of Alaskan intertidal invertebrates. The tour focuses on the adaptations that intertidal animals need to brave the surf, tides, and predators. In addition to the virtual tour, students can submit

their questions for scientists to answer, and teachers can download a trip journal for their students to complete as they follow the tour.

<http://www.efieldtrips.org/Invertebrates/index.htm> .

SeaWinds Scatterometer

One of NASA's Earth-observing instruments, the SeaWinds scatterometer, Midori 2, transmits radar data to measure wind speed and direction over Earth's oceans. It provides high resolution and broad geographic coverage of ocean wind speed and direction, sea ice extent and properties of Earth's land surfaces.

<http://winds.jpl.nasa.gov>

SE-PORT Ocean Awareness Days from SouthEast COSEE

The South East Portal to Ocean Research for Teachers (SE-PORT) is an initiative from the SouthEast Center for Ocean Sciences Education Excellence (SouthEast COSEE). The targeted region includes Georgia, North Carolina and South Carolina. SE-PORTs are partnerships between SouthEast COSEE, an informal education institution (e.g. aquarium, science center), and the teachers who participate in the SouthEast COSEE Ocean Sciences Education Leadership Institutes.

<http://www.scseagrant.org/se-cosee/partners.htm> .

Shark Tagging Through Project Oceanica

Charleston Bump research conducted in 2003 includes tagging and tracking of oceanic sharks using satellite tags. Tagging results will be transmitted by satellites and posted on the Project Oceanica website. Students e-mailed questions to the shipboard and laboratory researchers and the results are posted on the web. Student activities and other information are also posted.

<http://oceanica.cofc.edu/SharkTagging/Home.htm>

Shifting Baselines

The Ocean Conservancy is partnering with other organizations, scientists, and filmmakers to produce Public Service Announcements, slide shows, and other multimedia resources to communicate some of the issues involved in ocean resources declines and the shifting baseline phenomena. All materials may be downloaded from the website. Both English and Spanish versions are available.

http://www.shiftingbaselines.org/index_site.html#

Shorebird Management Listserve

A monitored shorebird management listserv, a cooperative partnership of the U.S. and Canadian Shorebird Conservation Plans and maintained by the U.S. Fish and Wildlife Service, provides users with: a forum to discuss approaches to managing shorebird habitats and discuss regional-scale projects; information on shorebird management resources; answers to specific questions; and technical advice on monitoring shorebirds.

Brad_Andres@fws.gov

Shorebirds of the Pacific Flyway eField Trip

The U.S. Fish and Wildlife Service offers schools nationwide the opportunity to participate in an eFieldTrip titled, "Shorebirds of the Pacific Flyway: Who Are These Olympic Flyers?" The trip is designed to help students learn about what a shorebird is and how to identify shorebirds of the Pacific Flyway.

<http://www.efieldtrips.org/Shorebirds/index.htm> .

Shorebird Sister Schools Program

The Shorebird Sister Schools Program is an Internet based environmental education program that connects students, educators, biologists, and birding enthusiasts along migratory flyways. The program includes three key components: K-12 curriculum, email network, and web site. A webcast on April 7, 2003 explored shorebirds, their migration, and the Shorebird Sister Schools Program.

<http://sssp.fws.gov>

Shoreline Trash: Studies at Padre Island National Seashore

For advanced students interested in pursuing more exploration of the problem of marine debris, the National Park Service published a comprehensive study: *Shoreline Trash: Studies at Padre Island National Seashore, 1989-1998*.

phyllis.dermer@noaa.gov

SimForest

Not quite marine, but too good to miss: SimForest is an NSF-funded project aimed at developing simulation-based software to support inquiry learning. It enables students to plant more than 30 kinds of trees and then choose the environmental factors that affect their growth, such as rainfall, temperature, and soil conditions. The down-loadable software and materials are intended for biology and ecology classes in grades 7-12. Teacher and professional development materials are included.

<http://ddc.hampshire.edu/simforest/> .

Skyeye Weather Teacher's Corner

Skyeye Weather is a weather consulting, education, and career development firm. Their Teacher's Corner website has helpful weather information links plus information on weather-related topics for teachers and students. It also includes science experiments and weather education background information. For elementary students, Puffy-Q answers basic weather questions.

<http://www.skyeyeweather.com/learn.html> .

Smart Consumers Education Module

World Wildlife Fund's latest education module in the Windows on the Wild series, for grades 6-9, is *Smart Consumers: An Educator's Guide to Exploring Consumer Issues and the Environment*. This 300-page toolkit includes an educator's guide with background information, hands-on activities, an annotated list of resources, a Community Action Guide, and more. For more information, check out

http://www.worldwildlife.org/windows/education_guides.cfm#3

Smithsonian Folklife Festival

The Smithsonian Folklife Festival, Washington, DC, June 23-27, and June 30-July 4, 2004. One of the festival themes this year is *Water Ways: The Past, Present, and Future of Maritime Communities in the Mid-Atlantic*, celebrating the coastal region stretching from Long Island, New York, through New Jersey, Delaware, Maryland, and Virginia to the Outer Banks of North Carolina. Maritime workers and artisans from 15 communities in these states will come together to demonstrate their skills and share their stories.

<http://www.folklife.si.edu/CFCH/festival2004/Festival2004.htm> .

Smithsonian Lesson Plans

Smithsonian lesson plans emphasize inquiry-based learning using primary sources and museum collections. Each plan is print-friendly and provides you with all the materials you need—photographs, reproductions, handouts, activities, suggested strategies, standards information, and additional online resources. The searchable database allows you to browse lesson plans by subject area or search by grade levels and keywords. Check out Ocean Planet: Marine Science Activities.

http://www.smithsonianeducation.org/educators/lesson_plans/lesson_plans.html .

Sooty Shearwater Tracking

The www.seaturtle.org website posts the results of satellite tracking of the pelagic seabird, the sooty shearwater. The tracks illustrate the trans-Pacific migration of ten (so far) sooty shearwaters from California to the southern hemisphere. The data is updated every even-numbered day as these birds with satellite tags make their way across the Pacific.

http://www.seaturtle.org/tracking/?project_id=46

SouthEast Portals to Ocean Research for Teachers

SouthEast Center for Ocean Sciences Education Excellence (SouthEast COSEE), reaches out to the education community with ocean science information in the southeastern region of NC, SC and GA. 12 *SE PORTs* (SouthEast Portals to Ocean Research for Teachers) have been formed in partnerships between SouthEast COSEE, an informal education institution (such as a museum or aquarium), and teachers.

<http://www.scseagrant.org/se-cosee>

Special Days for Environmental Education 2005 Planner

Each year there are special days set aside for environmental education. We all know Earth Day is in April, but when is America Recycles Day, Arbor Day, National Wildlife Week, and American Wetlands Month? This web page from EE in Georgia highlights special environmental days.

<http://eeingeorgia.org/net/content/item.aspx?s=16215>

State of the Nation's Ecosystems: Annual Update 2003

The first annual update of the 2002 report *The State of the Nation's Ecosystems: Measuring the Lands, Waters, and Living Resources of the United States* has been released by The Heinz Center. The report was published in 2002, with a 20-page chapter on Coasts and Oceans, as well as chapters on five other types of ecosystems. The 2003 update provides access to data on ecosystem conditions that have become available since the full report was published.

<http://www.heinzctr.org/ecosystems/report.html> .

State Policies and Programs Related to Marine Managed Areas: Issues and Recommendations for a National System

CSO and the National MPA Center conducted research and interviews related to state level marine managed areas (MMAs) and the potential for future federal/state coordination within a national MPA system. This report characterizes existing MMA policies and programs at the state level; presents the potential implications of the proposed national system of MPAs for coastal states; and proposes recommendations toward national MPA system for consideration by both state and federal officials.

http://www2.mpa.gov/mpa/mpaservices/virtual_library/publications.lasso .

Southeast Phytoplankton Monitoring Network

The Southeast Phytoplankton Monitoring Network (SEPMN) is a NOAA-funded harmful algal bloom (HAB) monitoring program based in Charleston, SC. This program is designed to get students and the community involved in science research to help understand HABs and their effects on humans and the environment. Volunteers include elementary, middle, and high school students, colleges and universities, civic groups and environmental organizations, and state and federal research institutions.

<http://www.chbr.noaa.gov/CoastalResearch/SEPMN/index.htm>

Sustainability Education Resources from Facing the Future

Facing the Future: People and the Planet is a non-profit organization providing teachers, students, and the public with global issues education and action opportunities to shape our future. Their programs include curriculum development, teacher workshop, service learning opportunities and more.

<http://www.facingthefuture.org/About/index.htm>

Sustainability Lesson Plans

The Center for a Sustainable Future website includes lessons on land use patterns, ozone and particulates, fossil fuels and global warming, usable water, along with other topics related to designing sustainable communities.

<http://csf.concord.org/esf/index.php?module=curriculum&type=unit&func=view&order=theme>

Talking Biodiversity: Getting the Message Across

The Royal Society for the Protection of Birds (RSPB) has recently released a report entitled *Talking Biodiversity: Getting the Message Across*. This publication is part of an RSPB project which has explored different approaches and ideas that could help biodiversity specialists strengthen their communications strategies. Five articles highlight a range of issues, including the historical factors that continue to affect the rights of indigenous peoples, the roles of scientists and journalists, and more.

stella.rumbles@rspb.org.uk

Teacher At Sea Program

Join NOAA's *Teacher at Sea Program*, August 26-September 26, 2003, as they crossed the equator while servicing the TAO/TRITON buoy array in the equatorial Pacific Ocean. This array is critical to our understanding of El Niño and for monitoring the dynamics of our oceans. There are webcasts, videos, and opportunities for teachers on future voyages.

<http://www.tas.noaa.gov>

Teacher Loan Forgiveness - The Taxpayer-Teacher Protection Act

Teachers who teach math, science, or special education and who have taught for five years in a Title I school may be eligible for new loan forgiveness limits.

<http://www.ed.gov/teachers/how/tools/initiative/updates/2005/0124.html>

Teachers' Domain Multimedia Digital Library

WGBH, through funding from NSF, provides a digital library of multimedia for teaching and studying life sciences, including ecology and ecosystems, evolution, adaptation, genetics, and more. It includes broadcast clips and video modules from programs such

as NOVA, A Science Odyssey, and ZOOM; interview segments; out-take footage; and interactive web-based activities, along with contextual information for teachers.

<http://www.teachersdomain.org>

Teaching the Poetry of Rivers

The Colorado Foundation for Water Education offers online lesson plans for teachers that address the interdisciplinary study of watersheds, and assist students with submissions to the River of Words Poetry Contest. These self-paced lesson plans integrate culture, history, poetry, and watershed science.

<http://cfwe.org/row.asp> .

Team OCEAN – On-Water Ocean Conservation Education Action Network

The Team OCEAN Program promotes public education, including informative brochures as well as one-on-one interpretation; stewardship, by instilling a sense of personal understanding, ownership, and responsibility for the Sanctuary among the general public; and sanctuary presence on the water, emphasizing the importance of the proper use of our resources, now and for future generations.

<http://www.fknms.nos.noaa.gov/edu/ocean.html> .

This Land Is Your Land Curriculum

This free, activity-based youth curriculum was developed by Michigan State University Extension. Though developed for grades 3-5, the lessons are easily adaptable to any grade level. *This Land Is Your Land* is a set of land use curriculum materials designed to help students develop into involved citizens who understand the importance and practice of wise land use. It is designed so young people can contribute solutions to current land use issues and participate in making sound decisions now and in the future.

<http://web4.msue.msu.edu/msuewc/kent/yourland/>

This Week at Hilton Pond – Seagulls

While the focus for this research center is the South Carolina Piedmont, the latest posting on seagulls underscores the fact that you cannot separate “marine” from the greater environment.

<http://www.hiltonpond.org/ThisWeek040115.html> .

Tidepool Math

From the Minerals Management Service (MMS) and the Multi-Agency Rocky Intertidal Network (MARINe) comes Tidepool Math, curricula for K-8 and high school. Students use a plot of a mussel bed to better understand sampling, estimating, and the scientific method. The website has downloadable curricula, photographs to use for the sampling exercises, and flash cards of typical tidepool organisms, or order the CD. Check out the MMS Kids' Pages for other information on Ocean Energy, Sand, and more.

<http://www.mms.gov/mmskids/> .

Track Sea Turtles On-Line

SEATURTLE.ORG provides sea turtle researchers with a tool for collecting, managing and sharing sea turtle satellite tracking data in near real-time. There is a list of tracking projects, links to background information about each program and the turtles they are tracking, and maps that are updated daily. A section for teachers is under development.

<http://www.seaturtle.org/tracking/>

Travel Matters

The Travel Matters website helps students, teachers, and others learn about how their travel habits and vehicular choices affect climate change. TravelMatters offers interactive emissions calculators, on-line emissions maps, and education content that emphasizes the close relationship between more efficient transit systems and lower greenhouse gas emissions. The website includes questions, activities guides, an interactive quiz, resource lists, and more.

<http://www.travelmatters.org> .

Traveling Wetland Education Trunks for Texas

Twenty-five *Wetland Education Trunks* have been distributed to educators and education centers across Texas and are available for loan to teachers. The trunks contain lesson plans, books, posters, videos, Texas Amphibian Watch materials and field equipment to guide students in their investigations of wetland habitats. The trunks emphasize learning in the classroom and in the field.

<http://www.tpwd.state.tx.us/edu/>

Tread Lightly Government Resources

The nonprofit organization Tread Lightly! is a nonprofit whose mission is "To empower generations to enjoy the outdoors responsibly through education and restoration." They have developed a new web section specifically for employees of land and water management agencies. It was created to be a clear-cut, effective resource to provide aid to agencies who deal with recreation issues on their land or water.

www.treadlightly.org/govresource.mv .

Tread Lightly! Play Nice Campaign

Tread Lightly! has just completed a revamp of it's *Play Nice* Public Service Announcement Campaign, created to encourage and inspire recreationists to minimize their impact and be responsible in the outdoors. Available PSAs include fishing, personal watercraft use, and more.

<http://www.treadlightly.org/edu.mv?edu=Public%20Service%20Announcements> .

Tree of Life: The Incredible Biodiversity of Life on Earth

This beautifully illustrated and child-friendly introduction to biodiversity, *Tree of Life*, shows how living things are classified into five kingdoms — and how each has much to tell us about all aspects of life on our planet. The book focuses on the idea that if every known species on Earth were a leaf on a tree, that tree would have 1,750,000 leaves. Since humans count for just one leaf on the tree, we have a lot to learn about the millions of other forms of life with which we share the world.

http://www.kidscanpress.com/kidscanpress/KidsCanPress_3/us_version/KCP/f_home.htm

Tsunami Curriculum

These websites are a small sampling of those that host background and curriculum about tsunamis.

- Asia Society K-12 Teacher's Resource Site: <http://www.askasia.org/tsunami/>
- Gross Point Public School System: <http://www.gpschools.org/ci/tsunami.htm>
- National Science Teachers Association:
http://science.nsta.org/nstaexpress/nstaexpress_2004_01_10_tsunami.htm

- NOAA Intergovernmental Oceanographic Commission:
http://www.prh.noaa.gov/itic/library/pubs/curriculum/tsunami_curriculum.html
- U.S. Geological Survey, Coastal and Marine Geology Program:
<http://temp.water.usgs.gov/tsunami/>
- U.N. Atlas of the Oceans – Impact of Tsunamis on Ecosystems:
<http://www.oceansatlas.org/id/71687>

Turning the Tide: The Eradication of Invasive Species

The Hawaiian Ecosystems at Risk Project (HEAR) provides technology, methods, and information to decision-makers, resource managers, and the general public to help support effective science-based management of harmful non-native species in Hawaii and the Pacific. These articles from the Proceedings of the 2001 International Conference on Eradication of Island Invasives, Auckland, New Zealand, along with other pertinent articles, have been posted on the website under “Online full-text articles”.
<http://www.hear.org/index.html> .

UN Atlas of the Oceans Newsletter

The UN Atlas of the Oceans newsletter provides a round-up of the latest activity on the website, including most recently added topics, content, and special happenings such as new partnerships or awards. Recent additions include information about arctic ecosystems. To subscribe, click on “join now” under the search function.
<http://www.oceansatlas.org/> .

Underwater Videos Available On-Line

The Perry Institute for Marine Science / Caribbean Marine Research Center posts three educational videos to provide a glimpse at our underwater environments, including MPAs, coral reefs, and Nassau Grouper.
<http://www.cmrc.org/pubs.htm>

UNEP Publications on Water & Waste Management and Tourism & Biodiversity

A Manual for Water and Waste Management: What the Tourism Industry Can Do to Improve Its Performance looks at solid waste and water management and provides guidelines and examples of how tourism operations can achieve positive results.
Tourism and Biodiversity: Mapping Tourism's Global Footprint, illustrates the overlap between tourism development and biodiversity hotspots.

http://www.uneptie.org/pc/tourism/library/mapping_tourism.htm

http://www.uneptie.org/pc/tourism/library/waste_manual.htm

UNEP Portal

The United Nations Environmental Programme Network provides a global portal to authoritative environmental information based on themes and regions. Some thematic portals include climate change, freshwater, and a geo-data portal with many marine data sets. Information includes announcements and news, initiatives, and resources.
<http://www.unep.net/>

USS Arizona Preservation Project – Daily Project Updates

Archeologists from the Submerged Resources Center of the U.S. National Park Service conducted a three-week investigation of the wreck of USS ARIZONA. Using nondestructive techniques, the team conducted tests to determine the structural integrity of the ship, record in detail its current state for comparison with earlier surveys, and

collect environmental data in the interior of the ship using remotely-operated vehicles. Daily updates on the team's activities will be posted to the project website.

<http://www.pastfoundation.org/Arizona/>,
<http://www.nps.gov/submerged> .

USS Monitor Center

The Mariners' Museum and NOAA broke ground on the USS Monitor Center in Newport News, Virginia. The USS Monitor Center will illuminate the individual human stories of those who designed and built the *Monitor* and the *CSS Virginia* and sailed them into battle on March 8 and 9, 1862. The Center will also highlight NOAA archaeologists, scientists and U.S. Navy divers who worked on the project.

<http://www.monitorcenter.org/>

Virtual Field Trips Database

The University of Texas Library hosts links to a collection of virtual field trips and guides throughout the United States and Canada. The sites contain local geological or earth science information and include links to downloadable versions of published paper texts. One selection takes you to the Carolina Coastal Science website, an inquiry-based science resource that explores science in coastal Carolina. Visit barrier islands, the Channel Islands, Hawaii, and more through the database.

<http://www.lib.utexas.edu/geo/onlineguides.html>

Virtual Whale Watch

Bring a whale to school. Landlocked pre-K-6 students in Mid-Atlantic states can participate in a simulated whale watch and activities to stimulate their interest in marine science and endangered species. The website features a Kid's Page with whale sounds, "Ask a Scientist," resources, and information appropriate for pre-K-6.

<http://members.aol.com/passintime> .

Visions of Undersea Alaska: 2005 Engagement Calendar

Alaska's pristine seas teem with life beyond imagination. With more than 50 colorful underwater photos, this calendar from Sea Grant provides an up-close look at Alaska's amazing sea life, ranging from tiny space-alien-like plankton to invertebrates, fish, marine mammals, and seaweeds. Photos were taken by scientists, scuba divers, and professional photographers in Southeast Alaska, the Aleutians, and other Alaska locations. Captions provide fascinating facts about each subject.

http://www.uaf.edu/seagrant/Pubs_Videos/pubs/SG-ED-45.html

Vocalizations of Georgia's Frogs CD

Presenting the unique calls of all 31 species of Georgia's frogs, the Calls of the Wild CD is produced by the Georgia Department of Natural Resources, Wildlife Resources Division to introduce the wonderful and often bizarre calls of Georgia's frogs and toads. The CD has separate recordings of every native species. Narration is provided for each of the individual species' recordings, along with a 15-page booklet.

<http://eeingeorgia.org/page.asp?itemid=13156>

Walt Disney's Sacred Planet

Walt Disney's new film, Sacred Planet has been released in IMAX theaters. Some of the film locations include old growth forests of British Columbia, underwater Borneo, New Zealand beaches. The images include the landscape, the people, and the animals indigenous to the land. There is also a downloadable Educator's Guide.

www.sacredplanet.com .

Watchable Wildlife Program

The *Watchable Wildlife Program* is a cooperative, nationwide effort made up of state and federal agencies to support the public's interest in viewing wildlife and conserving wildlife habitat. NOAA Fisheries' Office of Protected Resources and the National Ocean Service's National Marine Sanctuary Program ensure that marine species and habitats are included in the program, and develop appropriate marine viewing guidelines.

jill.lewandowski@noaa.gov

Water Education Posters

This U.S. Geological Survey series offers six educational posters, on Wetlands, Water Use, Wastewater, Navigation, Ground Water, and Water Quality. Each poster is available in two versions, one for elementary students and one for middle-school students.

<http://water.usgs.gov/outreach/OutReach.html>

Water for Life: UN Proclaims International Water Decade 2005-2015

At its 58th session, the United Nations General Assembly adopted a draft resolution proclaiming the period from 2005 to 2015 as the International Decade for Action, "Water for Life", starting on World Water Day, 22 Mar 2005. The goal of the Decade is "a greater focus on water-related issues, with emphasis on women as managers of water to help to achieve internationally agreed water-related goals".

<http://www.unesco.org/water/> .

WaterNews

WaterNews is a weekly on-line publication of the U.S. Environmental Protection Agency's Office of Water that announces publications, policies, and activities.

<http://www.epa.gov/water/waternews/> .

Water Resources of the Caribbean Countries & Territories

The CD *Water Resources of the Caribbean Countries & Territories* is now ready for distribution (for a nominal cost). The CD has information for 35 countries, islands and/or territories, including maps; size, population, climate, economy; water availability, supply, and demand; vulnerability of coastal aquifers; coastal zone issues; and legal setup and institutions.

jasrinko.karanjac@uwimona.edu.jm .

Water Safety

The U.S. Army Corps of Engineers is the leading provider of outdoor recreation on all federally-managed public lands in the United States. With a recreation base that is primarily built around water, the Corps has a dedicated focus on water safety. The pages of the National Water Safety Program website let you view current water safety materials available through the Corps program, download *Safe Passage* program information, and more. The Water Safety Fun Book can be downloaded at

<http://www.lacoast.gov/education/kids/coloringbooks/watersafety/>.

The National Water Safety Program homepage is at <http://watersafety.usace.army.mil/>.

Water Science for Schools

This site from the U.S. Geological Survey explores many aspects of water. This website includes pictures, data, maps, and an interactive center where you can test your water knowledge. A glossary and related links are also included.

<http://ga.water.usgs.gov/edu/>

Watershed Action: Educate the Public

The Center for Global Environmental Education website offers information for teachers, grades 6-12, to plan educational activities for students to protect and clean up watersheds. Projects include trash cleanup, stenciling storm drains, testing soil nutrients, composting, planting to prevent erosion, and water quality monitoring. Instructions are provided, and links to related information are provided for teachers and students.

http://cgee.hamline.edu/watershed/action/projects/public_ed.htm

Watershed Patch Project

The EPA's Watershed Patch Project teaches students what watersheds are and motivates them to get involved in local watershed protection activities. The booklet includes step-by-step instructions for community-based watershed protection activities, including stream walks, monitoring projects, and stream cleanups. The project, with certificate awards, is modeled after a similar project with the Girl Scouts of the USA.

<http://www.epa.gov/adopt/patch/certificates/>

Watery Ring of Life: Saving our Estuaries, a PBS Broadcast

The Teaching Learning Network has produced a documentary featuring four National Estuary Programs: Maryland Coastal Bays, Narragansett Bay, Mobile Bay, and Puget Sound. The documentary presents information about estuaries, including their social and economic importance, and highlights steps the four estuaries are taking to protect and restore their valuable resources.

drvolk@erols.com

Wavebreaking News

NOAA's National Ocean Service (NOS) presents the fall edition of Wavebreaking News, a multimedia presentation of developments in NOS science and technology. Available in Quicktime or Windows Media for different connection speeds, this brief news report features the Hunt for the Alligator, Navigation Safety, and Dolphin Health Exams. Links to information and contacts allow in-depth research into these topics. And while you're on the website, check out the links to the NOS data explorer, publications, and other topics. <http://oceanservice.noaa.gov/news/wbnews/welcome.html> .

Waves, Wetlands, and Watershed, and Coastal Bluffs

The California Coastal Commission presents *Waves, Wetlands, and Watersheds*, an activity guide that addresses issues such as endangered species, coastal geology, and water use. A four-page primer on *Coastal bluff erosion* further investigates coastal processes. A Marine, Coastal & Watershed Resource Directory contains information on organizations working on issues related to the coast, including educational resources.

www.coastforyou.com, click on "For Educators."

Wayfinders: A Pacific Odyssey

This website is the companion for a PBS film that features a community of Pacific Islanders as they build sailing canoes & follow the stars on a 2,000-mile voyage across

the ocean. The site includes a wayfinder game, an essay on navigating "blind," an interview with a wayfinding expert, links to related websites, and more.

<http://www.pbs.org/wayfinders/>

Weather and Climate Data at the National Climatic Data Center (NCDC)

The National Climatic Data Center operates the World Data Center-A for Meteorology, in Asheville, North Carolina, and the World Data Center for Paleoclimatology, in Boulder, Colorado. NCDC provides access to all of the on-line data at no cost to users with .k12.xx.us or .edu domains. Free products include, but are not limited to monthly weather data summaries for a range of sites, historical weather maps, hourly precipitation data for a range of sites, and more.

<http://ols.ncdc.noaa.gov/phase3/freeaccess.html> .

<http://www.ncdc.noaa.gov/oa/ncdc.html> .

Western Regional Climate Center

One of six regional climate centers in the United States, the Western Regional Climate Center is administered by the NOAA, and is overseen by the National Climatic Data Center. Covering the area from Colorado to the boundary of the continental U.S., and including Hawaii and Alaska, this website hosts historical climate information and current atmospheric observations and frequently updated forecasts. In addition to the scientific information, the site also has a number of educational pages.

<http://www.wrcc.dri.edu/>

WET in the City and Team WET Schools

WET (Water Education for Teachers) in the City, an urban environmental education program of the Council for Environmental Education, engages K-12 youth in hands-on activities that creatively explore the science of water, its cultural context, and complex issues surrounding its management and stewardship. Team WET Schools is a companion program to WET in the City, bringing urban water issues to the forefront of environmental education in school buildings.

<http://www.wetcity.org/>

Wetland User's Guide

An Introduction and User's Guide to Wetland Restoration, Creation and Enhancement, produced by EPA and NOAA, introduces non-technical readers to the basics of wetland projects, including planning, implementing and monitoring, and provides other references. To request a free copy, key EPA843B03001 into the search engine.

<http://www.epa.gov/ncepihom/index.htm>

Wetlands Documents

A variety of publications are available for downloading at the Wetlands International website, including *The Socio-Economics of Wetlands* and *The 7th Directory of Wetlands of International Importance*.

<http://www.wetlands.org/pubs&/nwdnloads.htm>

Wetlands Training and Curricular Guides

POW! Planning of Wetlands guides educators through the creation, restoration or enhancement of a wetland on school grounds or within the community. *Wow! The Wonders of Wetlands* includes activities in lesson plan format, background information on wetlands, ideas for student action projects, and a wetlands resource guide. An online wetlands course covers basic wetland ecology, types, functions and management.

<http://www.wetland.org/educa.htm>

WET-WASH Initiative for Coastal Sewage Contamination

Globally, sewage is the largest source of marine contamination by volume. To address this, the United Nations launched a new campaign to clean up the seas by ensuring that people have access to toilets and safe drinking water. The partnership combines the Wastewater Emission Targets initiative with the Water, Sanitation and Hygiene for all campaign. The WET-WASH website has downloadable resources, including a training manual and 10 keys for sustainable municipal wastewater management.

<http://www.gpa.unep.org/pollute/sewage.htm> .

What's an Estuary, Now You Know

The Association of National Estuary Programs, in partnership with the National Estuarine Research Reserves, launched the *What's An Estuary? Now You Know* campaign to make the word "estuary" a household word by 2005. A multimedia presentation is available for viewing and downloading from the website. In 2004, the campaign will launch a media campaign featuring television, radio, and print ads.

www.whatsanestuary.com

What's an Estuary? Now You Know CD-ROMs Available

4900 copies of the Association for National Estuary Program's *What's an Estuary? Now You Know* CD-ROMs are available to order from the US EPA's National Service Center for Environmental Publications. There will be a limit of 25 CDs per order, though requests for larger quantities will be considered for special events or estuary education and outreach needs.

<http://www.epa.gov/ncepihom/> .

Whooping Cranes Migration

This educational website was developed through a partnership of Annenberg/CPB, Journey North, and the Whooping Crane Eastern Partnership. This site connects to an extensive selection of lessons, activities and information, facts about Whooping Cranes in question/answer format, and background information about the Whooping Crane Reintroduction Study. Users can also connect to highlights from the Year 3 Reintroduction and Migration including maps, video clips, and photos

<http://www.learner.org/jnorth/fall2003/crane/index.html> .

The Why Files

Science touches our lives in countless ways. Yet people often think science is relevant only to a white-coated, lab-dwelling elite. The Why Files portray science as a critical human endeavor conducted by ordinary people. They use news and current events as springboards to explore science, health, environment, and technology, with plenty of focus on the ocean. Their real-life approach to science writing, and correlation to science teaching standards, can help you bring the news and science into the classroom.

<http://whyfiles.org/index.html> .

Wild Things 2003 - Habitat is Home Sweet Home

The U.S. Fish and Wildlife Service and its partners sponsor a *Wild Things* Electronic Field Trip yearly. This year they broadcasted a free, live, interactive satellite learning adventure geared towards Grades 5-7. *Wild Things* helps students and teachers explore and learn about National Wildlife Refuges and the fascinating critters that inhabit them.

www.nationalgeographic.com/geographyaction, <http://www.wildthingsfws.org/>

Wings Over Water Festival

Wings Over Water, on North Carolina's Outer Banks, celebrates the wildlife and wildlands in eastern North Carolina, drawing visitors from all over the country to experience the unique landscape, dunes, marshes, and inland forests of the Outer Banks while participating in birding, natural history, outdoor recreation, and paddling programs. The festival is a partnership between the Fish and Wildlife Service, the National Park Service, the Outer Banks Chamber of Commerce, and more.

www.wingsoverwater.org

Wonderful World of Weather

This standards-based Real Time Data Module for elementary students, developed by the Center for Improved Engineering and Science Education (CIESE) at the Stevens Institute of Technology, allows students to investigate weather phenomena locally and in other places around the world. By using hands-on activities and real-time data investigations, the students develop an understanding of how weather can be described in measurable quantities, such as temperature, wind and precipitation.

http://www.k12science.org/curriculum/weatherproj/index_NEW.html .

World Atlas of Seagrasses

UNEP/World Conservation Monitoring Center released the World Atlas of Seagrasses. The Atlas is the first book to summarize the global status of seagrasses. The book is a collaboration of leading experts in the field.

<http://www.unep-wcmc.org/marine/seagrassatlas/>

World Conservation Monitoring Center Interactive Map Service (IMAPS)

UNEP-WCMC has been pioneering the delivery of interactive map-based conservation data on the Internet. Current GIS data sets that UNEP-WCMC maintain include Coral reefs, Seagrasses, Mangroves, and Protected Areas. The web GIS maps are easy to use and offer a basis for scientific inquiry and exploration in the classroom.

<http://www.unep-wcmc.org/index.html?http://www.unepwcmc.org/reception/ims.htm~main> .

World Conservation Monitoring Center Publications and Information

The United Nations Environment Program – World Conservation Monitoring Center maintains a large number of reports on different aspects of the environment, including biodiversity, ecosystems, and climate change. The website has a list of reports, many downloadable.

<http://www.unep-wcmc.org/index.html>

World Database on the Protected Areas of the World

The World Database on Protected Areas (WDPA) Consortium website contains information about the 2004 World Database on the Protected Areas of the World, a CD-ROM product. It was part of the WDPA Consortium efforts to share conservation information for the Fifth World Parks Congress. The Consortium welcomes contributions to the database by experts on protected areas.

http://www.biodiversity.org/wcpa/ev.php?URL_ID=1697&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1099533914 .

World Environment Day

World Environment Day, commemorated each year on June 5, is a principal vehicle through which the United Nations stimulates worldwide awareness of the environment and enhances political attention and action. This year's theme is *Wanted! Seas and Oceans – Dead or Alive?*, and the host nation will be Spain. A down-loadable poster is available in six languages.

<http://www.unep.org/wed/2004/> .

World Heritage Sites

The United Nations Educational, Scientific and Cultural Organization (UNESCO) encourages the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. The World Heritage List has 754 properties - 582 cultural, 149 natural and 23 mixed properties in 129 States. The natural site datasheets provide plenty of information for comparisons. The *World Heritage Information Kit* is a downloadable document that provides a program overview.

<http://whc.unesco.org/pg.cfm?cid=1> .

World Ocean Passport

The World Ocean Network's mission is to inspire and foster a change in individual behavior towards a sustainable management of the global ocean, and its task is to coordinate communication to the public about ocean issues and marine resource management. The World Ocean Passport is an educational tool for its member organizations to promote ocean awareness and conservation with their visitors.

www.nausicaa.fr/reseau/ .

World Oceans Day

World Oceans Day, celebrated yearly on June 8, was created in 1992 at the UN Earth Summit in Rio de Janeiro. The Ocean Project has established a North American World Ocean Day planning committee in an effort to coordinate efforts, develop and suggest awareness-raising tools, resources, and activities, and establish an annual theme.

Please let them know what you are planning so they can highlight your organization on their WOD website. Visit the website periodically as people send in their activities.

<http://www.theoceanproject.org/news/oceanday.html> .

World Water Day 2004

The UN International Strategy for Disaster Reduction and the World Meteorological Organization have been charged with coordinating World Water Day 2004 on March 22, 2004. This year's theme is *Water and Disasters*.

http://www.unesco.org/water/water_celebrations/index.shtml .

World Water Monitoring Day

America's Clean Water Foundation and the International Water Association invite your participation. On October 18, 2004 citizens of the global community will join in World Water Monitoring Day, a worldwide opportunity to positively impact the health of rivers, lakes, estuaries and other waterbodies. Volunteer monitoring groups, water quality agencies, students, and the general public are invited to test four key indicators of water quality: temperature, pH, dissolved oxygen, and turbidity.

<http://www.worldwatermonitoringday.org/> .

World Water Monitoring Day

America's Clean Water Foundation and the International Water Association invite citizens and organizations to share in the experience of water quality monitoring. World Water Monitoring Day, October 18, 2003, serves as a global educational platform for watershed leaders, educators, and trained volunteers to help the public better understand how the actions of individuals in a watershed can impact many others.

<http://www.worldwatermonitoringday.org/>

World Wetlands Day, Yearly on February 2

World Wetlands Day takes place yearly on the 2nd of February and offers an opportunity "to undertake actions aimed at raising public awareness of wetland values and benefits in general and the Ramsar Convention in particular." The Ramsar Bureau hosts a central website for the use of everyone organizing World Wetlands Day activities. The theme for 2004 is "From the Mountains to the Sea - Wetlands at Work for Us", and 2005 is *Cultural and biological diversity of wetlands*. Information is also available in Spanish and French.

http://ramsar.org/wwd_index.htm .

Wyland Ocean Challenge, "Clean Water for the 21st Century"

The Wyland Ocean Challenge promotes student understanding of the complex and interrelated issues that affect our water systems through art. The program is a marine life art and science educational curriculum available free to every K-6 classroom. The program meets national standards for science and art, and includes art activities, case studies, and science experiments to teach students about the water on our planet.

<http://www.wylandoceanchallenge.org>

Wyland Ocean Challenge Cleanup

The Wyland Foundation, PADI, and Project AWARE have joined together for a 15-state, 16-city Wyland Ocean Challenge Coastal Celebration and clean-up tour, to inspire over 1 million people to promote, protect and preserve the nation's marine habitats. The campaign will be conducting a 1,700-mile series of cleanups and festivals along the east coast of the United States. The campaign will feature music, celebrity speakers, family activities, prize giveaways, and community clean-up events.

<http://www.wylandoceanchallenge.org/index.cfm?do=costalcleanindex> .

Year of Clean Water Outreach Materials – Nonpoint Source and Stormwater

The EPA website highlights different monthly topics to celebrate the Year of Clean Water and 30 years of the Clean Water Act. Materials include information brochures, posters, and even crossword puzzle placemats that can be customized for your organization. The Watershed Events newsletter highlights several education and outreach campaigns.

<http://www.epa.gov/water/yearofcleanwater/month.html>

<http://www.epa.gov/owow/watershed/eventspring03.pdf>